REPORT RESUMES

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AN ACADEMIC DEVELOPMENT PLAN FOR THE UNIVERSITY OF HAWAII, JANUARY 1964 AND 2 SUPPLEMENTS--1966, 1967.

BY- HIATT, ROBERT W.
HAWAII UNIV., HONOLULU, ACADEMIC DEVELOP.PLAN COM.

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A SURVEY OF POLICIES AND PROGRAMS AT THE UNIVERSITY OF HAWAII'S MANOA AND HILO CAMPUS IS USED AS THE BASIS OF A DEVELOPMENT PLAN. THE SURVEY DISCUSSES PROGRAMS AND FACILITY NEEDS IN RELATION TO THE OBJECTIVES OF INSTRUCTION, RESEARCH AND PUBLIC SERVICE. IMPLEMENTATION OF THE DEVELOPMENT PLAN INCLUDES DISCUSSION OF OPERATING BUDGET, CURRENT EXPENSES, EQUIPMENT AND PERSONNEL SERVICES, CAPITAL IMPROVEMENTS, PRESENT SPACE UTILIZATION, PROJECTED ACADEMIC, HOUSING, ATHLETIC AND UTILITY NEEDS, AND FINANCING OF HIGHER EDUCATION FROM LOCAL, STATE AND FEDERAL SOURCES. RECOMMENDATIONS SUGGEST REPLACING TEMPORARY AND OBSOLESCENT BUILDINGS, AND PLANNING TO PROVIDE NEEDED SPACE AND FUNDS FOR FUTURE NEEDS--ACADEMIC, OFFICE, ATHLETIC, PARKING. TWO SUPPLEMENTS ARE PROVIDED FOR 1966 AND 1967 WHICH DESCRIBE THE PROGRESS OF THE PLAN OF 1964 AND WHICH DISCUSS FURTHER OPPORTUNITIES TO IMPROVE THE PLAN. (HH)

for the University of Hawaii / January 1964

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THE UNIVERSITY OF HAWAII

Programs Throughout the Islands

Cooperative Extension Service

College of General Studies

Hawaii Agricultural Experimental Station

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Summer Session

An Academic Development Plan

for the University of Hawaii / January 1964

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Douglas S. Yamamura

Academic Development Plan Committee

FOREWORD

THE RECORD should show that planning for a social institution is an art and not a science. Under the very best of conditions the findings and projections produced by such planning can be but approximate. There are many reasons for this, but largely this is a product of the enormous number of variables involved as well as the extent to which one is simply not cognizant of factors which will appear in the future.

Long-range planning for a university is even more fraught with danger than planning for other kinds of social institutions. It is paradoxically true that one of the aims of the university is to discover new truths, and the mere discovery of those new truths may vitiate the very planning which brought the instrumentalities for discovering the new truths into being. This danger is greater now than ever before in history because of the rapidity with which we are accumulating new knowledge. There is no evidence that this rate of accumulation will lessen, and a great deal that it will quicken with the result that I am very sure that ten years hence the University of Hawaii will be working in fields which today are unknown or, at the most, dimly perceived by scientists working on the frontiers of knowledge.

If planning for any social institution, then, is approximate, and, if it is even more difficult in the case of the university than with other institutions, one might well raise the question: "Why bother?" And frankly there *is* some danger in setting forth a development plan for the University of Hawaii unless all of the *caveats* are noted. If ten years hence someone were to take our plan and observe that the University was not being consistent for things are now being done that were not projected, then the plan might prove to be more harmful than beneficial. But I am sure we shall have better community understanding of the problem than this.

In any event, there has to be some sort of a plan. We within the University need to know where it is wise to move next, where we should use our resources, and when. And if it be true, as it certainly is, that many things are going to change rapidly in the next ten to fifteen years, there are some things that are not, and there is little difficulty in identifying these. For example, we know how many students we are going to have to educate in the future, for these are not projections but lively youngsters. We also know that there is no possibility that there will be a reduction in the proportion of our youth who go on to college. In fact, all of the evidence indicates that this will continue to increase. Thus, there are some hard facts to which we can tie the planning procedure.

But there is an even more important step to be taken, and this is to make sure that each year this plan is revised. Unless it is kept current, it will not be a dynamic instrument for wise growth, but rather the dead hand of the past. This continuous revising of planning is something the University will maintain.

I should like to pay tribute to the committee which undertook this work. Through the understanding and support of our Legislature and the Governor's Office, we were able last summer to pay the members of this committee for one month's work. In truth, they have, each of them, worked something closer to four months because of their interest in the problem and their dedication to the University. What they have accomplished in this relatively brief time is to me little short of a miracle. Thus, I should like to extend to them the great appreciation of the University of Hawaii. We are particularly indebted to Dr. Robert Hiatt, Vice-President for Academic Affairs, who gave the committee leadership and the benefit of his considerable experience.

There are a number of rather unusual features of this plan which please me. One is that it was developed by University faculty members and administrators who will have the responsibility for staying and making it work. This is not to denigrate past studies that have been done by mainland experts. Many of these have been helpful, and some of the findings of these have been incorporated in this plan as have some of those contained in the *Report of the Study and Development Commission* of 1960. But it is very important that the actual working document which should guide our growth be finally a product of those who know Hawaii and its University and who have a real stake in the future of this institution.

A second desirable feature of this plan is that it recognizes that the University of Hawaii's future growth must be selective rather than comprehensive. We cannot possibly excel in all fields of knowledge, particularly at the graduate level. It is well that this be recognized and criteria of selectivity developed and used to enable wise choice among alternatives.

Thirdly, I am pleased with this plan because of the responsibility which the Committee showed in trying to determine whether or not the plan as here delineated could be supported by the Hawaiian economy as it can reasonably be projected into the future and as it can be supplemented by extramural funds. Universities, I fear, frequently stop short of doing this. To be sure, the eventual decision as to the extent to which the University can be supported is not in the University's hands. This is properly the case, but at least we believe that we have demonstrated that the program herein envisaged is not an impossibility in the State of Hawaii. To acquire perspective, I reviewed the State appropriations to the University of Hawaii of twelve years ago. The proportional increase envisaged here for 1975–76 actually is *less* than has been achieved in the last twelve years. I refuse to believe that we can not do in the future what we have accomplished in the past.

Finally, the plan pleases me because of its major emphasis on quality. Considering the time span covered, relatively few new programs are proposed. Instead, the emphasis is on taking a major step forward in enhancing the quality of the University of Hawaii. At a time when it would have been possible to let the quantitative predominate, this emphasis on quality is gratifying.

Higher education has meaning far beyond simply the economic well-being of a state or nation. But if one had to do so, it could be justified in those terms alone. Properly viewed money spent for education can be considered an investment rather than a consumer expenditure. Theodore W. Schultz, Professor of Economics at the University of Chicago; Raymond Poingnant, a French planner; Eugene R. Black, President of the World Bank; Professor Ingvar Svennilson of the University of Stockholm, a leading authority on the economics of growth; and many more have in the past few years testified to the validity of this proposition. Svennilson concludes in a recent paper that, "Education and research may thus be regarded as basic factors in the process of growth, while investment in capital equipment may be relegated to the role of a necessary by-product of the process."

Clark Kerr of the University of California in his recent book, ***The Uses of the University***, has this to say.

> Each nation, as it has become influential, has tended to develop the leading intellectual institutions of its world—Greece, the Italian cities, France, Spain, England, Germany, and now the United States. The great universities have developed in the great periods of the great political entities of history. Today, more than ever, education is inextricably involved in the quality of a nation. It has been estimated that over the last thirty years nearly half of our national growth can be explained by the greater education of our people and by better technology, which is also largely a product of the educational system.
>
> Basic to this transformation is the growth of the 'knowledge industry', which is coming to permeate government and business and to draw into it more and more people raised to higher and higher levels of skill. The production, distribution, and consumption of 'knowledge' in all its forms is said to account for 29 per cent of gross national product, according to Fritz Machlup's calculations; and 'knowledge production' is growing at about twice the rate of the rest of the economy. Knowledge has certainly never in history been so central to the conduct of an entire society. What the railroads did for the second half of the last century and the automobile for the first half of this century may be done for the second half of this century by the knowledge industry: that is, to serve as the focal point for national growth. And the university is at the center of the knowledge process.

THOMAS HALE HAMILTON
President

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INTRODUCTION

To Bring Leadership to the task of meeting the educational needs of people is an essential purpose of all universities. The University of Hawaii is committed to this goal. No man, no community, no educational institution wants to stand still. Just as a living community cannot be static, so the life of a university must move forward and always look ahead. One of the first aims of the University of Hawaii therefore is to provide an insightful sense of direction to our people as they strive to perceive their important needs.

The University of Hawaii is in part the product of that tradition which took form in the United States a century ago with the Morrill Land Grant Act. In 1907, not so very many years after Hawaii ceased to be an independent monarchy, the territorial legislature of that time established on Oahu, under the amended provisions of the Morrill Act, a "College of Agriculture and Mechanic Arts." In 1920 a later legislature gave the young institution a new design, a new policy and a new name. The modest college begun in the stony pastures and small truck gardens of lower Manoa Valley was officially transformed, by legislative act and the will of the people, to serve as Hawaii's university. Thus, between 1907 and 1920, the University of Hawaii sought out and managed to find its identity, in its earliest land-grant aspect, as a "college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote *liberal* and *practical* education of the industrial classes in the several pursuits and professions in life."

Such a generous goal for education beyond high school was, in its day, a revolutionary innovation. It represented an ideal of higher educational opportunity for the many rather than for an economically favored few. Such a new definition of the role of the university in society also meant a broadening, a reaching out, to embrace in a single institution a comprehensive range of academic experience. In its full span—not always successfully achieved—the new type of available education might extend from the encouragement of creative minds in the realms of truth and beauty to the training of effective technicians and professional practitioners. Since 1920, broadly considered, this is the tradition to which the University of Hawaii has given allegiance. It remains today the tradition in which the University has dedicated itself to the task of seeking new levels of educational quality, new standards of academic achievement that surpass unassuming competence.

The University of Hawaii has profited from the flexible educational philosophy which allowed the original land-grant college concept to merge with the enduring Western tradition of higher learning. The act of the territorial legislature in 1920, when it established the *University* of Hawaii, was in full accord with educational progress on the American mainland since at least 1890. The original land-grant act had not been intended to emphasize the non-professional areas of scholarship—learning, as we say, "for its own sake." Quite the contrary. In order to insure the broadly based and balanced curriculum of the University, and to safeguard the non-professional areas of scholarship, the charter which the legislature gave the University of Hawaii directed those responsible for the fortunes of the college in Manoa Valley to "lay the foundation for a larger range of collegiate work in Hawaii by establishing a university . . . sufficiently inclusive to provide for all future needs."

Much has been accomplished during the past 40 years to carry out the far-seeing intentions of that bygone legislature. Far more remains to be accomplished, however, and at a time in history of much greater urgency for the world at large, as well as for the Fiftieth State, than most people would have ventured to predict in 1907 or 1920. In any event, the University of Hawaii received from the lawmakers and the people a mandate which today it continues to serve. Within the framework of this mandate the University is the single state institution in Hawaii obligated to cover all the major phases of academic endeavor.

These main functions fall into three distinct but plainly interrelated categories: *teaching*, *research*, and *public service*. In each of these phases, the University is responsible for extending its opportunities to all who may be capable and who possess the desire and diligence to benefit from the University's services or participate in its programs. "Further than this," as former President Morrill of the University of Minnesota has said, "each [land-grant university] has recognized that knowledge transcends both state and national boundaries, and that a state university dedicated only to the narrow needs of its own state would prove too limited in its vision to meet even these needs adequately. The modern state university serves its own state best through its work in the wider world of science and scholarship with students, teachers, and researchers from every state and nation."

As a teacher, the University has a task of many facets and of rapidly changing techniques and implications. Its programs in the undergraduate liberal arts and sciences have developed both in breadth and depth particularly since the end of World War II. Since about 1950, and more markedly since 1955-1960, the expansion in certain professional and graduate areas has moved the University into a new era of growth and potential eminence—in special fields of concentration—among major American universities. The causes for this acceleration are complex, partly connected with population factors, partly related to Hawaii's achievement of statehood, no doubt. The causes are also related, both directly and indirectly, to the social and political struggles of our period.

Perhaps here we should note that the University's programs are available at a modest cost to all who are capable of collegiate work. In addition to the graduates from the high schools of Hawaii who make up the University's student body, a sizable and increasing proportion of its students are products of mainland high schools or transfers from mainland colleges. This marked trend is inevitable. It is also highly beneficial: to the students of local origin, to the *malihini* newcomers, to the faculty, and to the State as a whole—in short, to all concerned in this refreshing transaction which links Hawaii more closely than ever before with the academic expectations and habits of the United States mainland.

By means of the research it carries out, a modern university is called upon not only to communicate knowledge but also to increase it; and not only to increase it in sheer volume and weight, but to refine it, to interpret it, to understand its human value and relevance. Original investigative work in the sciences, joined with creative activity and scholarship in the arts and the humanities, produces results of the greatest interest and worth in their own right. And this is not all. The findings of the researcher and the fresh insights of the teacher-scholar also bring an urgent stimulation and vitality to the classroom. At the graduate level, where the University is engaged in the demanding and indispensable disciplines that make up the training of researchers, scholars, teachers, professional leaders of all kinds, an atmosphere of intellectual vigor and independence is one of the essentials of an outstanding university. This spirit of critical independence thrives well when it is joined with a spirit of competition and cooperation with other fellow-researchers following up new avenues of discovery.

Now it is true that there are limits to what any university can become, and it is not surprising that the University of Hawaii is no exception. However, in its graduate programs and as a research center in certain areas of study, there is reason to believe that the University of Hawaii can be a university of distinction and some uniqueness. It can become such if it selects its areas of emphasis with care.

This Development Plan rests on the conception that the future of the University of Hawaii will depend on how well it succeeds during the next several years in fulfilling its mission as already defined in its record and in the context of its distinctive geographical and cultural setting. The question of the University's future role, both in relation to Hawaii and to the world, is not essentially different from the question facing other universities in other regions, wherever men strive to develop the human and non-human resources that make up their communities. Although the fundamental problem is the same, the answer of the University must be its own, reflecting Hawaii's special advantages and taking account of its limitations.

Several criteria of selectivity stand out as guides, if the University given proper encouragement is to fulfill itself and achieve the distinction it seeks and the people of the State desire. The University's *geographical location* has already led to concentration in tropical agriculture, oceanography, and marine biology. The *physical environment* has focused interest on natural phenomena in geophysics such as tsunami research, volcanology and the like. But potentially the *multi-cultural composition of Hawaii and the multi-cultural idea* as such may prove the most useful and encompassing criterion. To be face to face with diverse cultural systems and attitudes stimulates the desire to investigate, to analyze, to compare, to appraise: to try to comprehend, above all, the concept of culture itself as a symbolic system of values greater than this or that historic art or science or technology, a concept that finally transcends man's natural attempt simply to adapt to his environment in the sense of manipulating or "exploiting" it.

Since the establishment of the University of Hawaii, the many cultures present in the local population together with Hawaii's proximity to and interest in Asia and the Pacific Basin have had a profound and invigorating effect. Certainly in no other part of the United States is there a comparable community-wide understanding that the state university has an explicit responsibility not only to the state and nation but to a geographical-cultural region of the world as well. One effect of that consensus in Hawaii is seen in the University's remarkable range of offerings in the languages of Asia and the Pacific—Chinese, Hawaiian, Hindi, Indonesian, Japanese, Javanese, Korean, Pali, Sanskrit, Tagalog, and Thai.

But the multi-cultural program as modified by geography extends beyond the area of linguistics and the symbol-systems that constitute language. There is hardly a department in which the cultural factor, combined sometimes with an interdisciplinary approach, has not left somewhere its mark. Course offerings include such items as field archaeology in Oceania, art of Asia Minor, India, and Southeast Asia, six courses dealing with the civilizations of the East, music of Asia, Oriental drama and theatre, fifteen courses concerned with Oriental philosophy, economic development of East Asia, geography of the Pacific islands—and these are only a few. The full list would be lengthy indeed.

If the "idea of a university" is related to the Latin *Universitas*, meaning all together, comprehensive, the universe, it is evident that the University of Hawaii in its pioneer effort to achieve a curriculum drawing from both the Western and Eastern cultural traditions has given more than lip service to the conception that a genuine university takes knowledge of all the world as its domain.

This feature of universalism in the curricular landscape of the University of Hawaii does not mean the University seeks to teach anything and everything. What it does mean is that the University encourages wherever it is appropriate cross-cultural study and interdisciplinary collaboration on various levels—in short, a "bridging" perspective—in the fields to which our physical and ethnic setting in its larger scope gives a special scholarly interest and relevance. Thus the presence in the Hawaiian Islands of several racial groups was in part responsible for the establishment of the Pacific Biomedical Research Center, in which considerable emphasis is given to human genetics. The College of Tropical Agriculture's program concerns itself with the food problems, the interrelated agriculture and economics and ecology, of tropical peoples. In the realm of ceremonial arts and civic entertainment the climate of Hawaii in the fullest sense of the word has always been conducive to the enjoyment of beauty, in woman, in man, in children, in nature, and to the graces that make life worth living. Within the next decade Hawaii's activities in the arts may be expected to gather momentum, range of tradition and symbolic appeal, and a more valid cosmopolitanism—with a richer international bearing than ever before—especially in music, painting, theatre and dance, and the performing arts in particular.

Surely the necessary principle of selective emphasis need not, under sound guidance and appropriate public support, result in the sacrifice of balance and the necessary sense of proportion among established programs. At least since 1920 the University of Hawaii has acknowledged the need for solid competence in all *fundamental* fields of knowledge. It is reasonable to affirm almost fifty years later a policy insuring community leadership in all the basic fields, working toward distinction in each, and assuming within the immediate future a role of positive eminence in a select number of areas.

Beyond the realms of regular resident teaching and research, the University has a special, significant and ever widening obligation to public service of many kinds. Historically, this phase of the University's function is part of its land-grant foundation, but the demands in Hawaii for making the services of the University more widely available will greatly increase. In Hawaii as on the mainland our society is becoming more knowledgeable about its educational shortcomings and its deeper cultural aspirations. Thus the demand will continue to mount for a great variety of adult educational institutes and conferences, for professional refresher courses, and, in short, for all the general services of continuing education.

The full concept of continuing education implies, however, not only the ongoing education of the individual but the larger life and the enduring civilization of which the individual is partly the product, and also partly the cause. "Men are not mere depositories and channels of transmission, because of the nature of that which is transmitted," writes the American philosopher Ralph Barton Perry. Perry goes on to remind us that, although the tools and artifacts found in geological deposits have endured when the users have perished, education as inheritance—and as the total environment which man inherits—refers precisely to that which, in the physical sense, is least durable. We live by virtue of symbols, of ideas, sentiments and habits whose vehicles are highly perishable.

Margaret Mead, the anthropologist, speaks of the sense of the unknown frontier, of the unforeseen tests of life, as one of the central themes in far-western American experience. In Hawaii, where American life is in many ways akin to the life of the Far East and to Polynesia, we live today among several such merging frontiers.

> We must concentrate upon teaching our children to walk so steadily that we need not hew too straight and narrow paths for them but can trust them to make new paths through difficulties we never encountered to a future of which we have no inkling today.

Part I: THE NATURE OF THE PROBLEM

OUR CHANGING SOCIETY

Everywhere in the United States institutions of higher learning are confronted with a task of unprecedented complexity. To meet society's need for trained intelligence, many colleges and universities must virtually double their physical capacities within a single decade. But the acute quantitative problem facing public institutions—how to find faculty, land, buildings, facilities and equipment—is only one phase of the larger issue. The other is the problem of quality. All countries are looking to universities, whether to their own or to others abroad, to help their people live better not only in the world of today but also in the world of tomorrow.

Universities must therefore do more than merely supply more education for more people. They must also provide *better* education to meet more complex needs. Furthermore, they must do this even while the study of the needs themselves and their interpretation is a science not yet fully understood.

Decisions concerning the growth and development of the University of Hawaii cannot ignore forces of change affecting universities everywhere. Until about 1945 the University was in a class by itself among land-grant universities. Its development was modest, piecemeal, and very gradual. At the outset the student body was comprised largely of enrollees from our own high schools who found themselves unable to attend colleges on the mainland, but who desired more than a high school education before entering the labor market.

Today such conditions and earlier incentives no longer apply—at least not in the same way. Hawaii's future is rooted in her present and past, but the life of her people is bound to change in ways we are only beginning to discern and in directions we need to understand better than we do. It is for this reason that policies and decisions affecting the University of Hawaii must be considered in full realization that students entering college during the 1960's and 1970's will be making their greatest contribution to society just as they move into the 21st century. The changes they will experience during the next forty years, the new conditions which they will encounter and help bring about in the world, will equal in scale and historic significance some of the profoundest changes of the past 400 years.

The basic and underlying change affecting the lives of successive generations of students in Hawaii as elsewhere will be the rapidly rising ratio of population to the world's resources. During the 1930's experts on the American birth rate were expecting a stable or declining population before the end of this century. Outstanding sociologists and economists sometimes held to the "stagnation theory" — that technology increased unemployment, our major economic growth was largely over, our "frontiers" as a pioneering society were gone. The massively mounting birth rate and the phenomenal increase in productivity since 1940 have disproved the earlier theory. A population of 164 million in the United States was passed in 1955 — thirty-five years ahead of schedule. Today we number more than 190 million, and the population is growing at about 2 per cent each year. The present prospect is that by the year 2000 we may have a population about twice the size of estimates projected only fifteen years ago. Most of us still find it difficult to adjust our sights to this alarming forecast.

The astonishing upsurge of our population has been accompanied by profound social changes. One such change, plainly to be seen in Hawaii, is the shift from a rural to an urban and highly industrialized way of life. In Hawaii, as on the mainland, the shift in the social environment has created new problems. Most of these extend beyond narrow regional frontiers, and all of them find their counterpart in other countries. They include such problems as water shortage, waste disposal, land use, transportation, housing, and public services of all kinds—especially the provision for a strong educational system.

None of these issues can be settled without extensive study and research, the high-grade skills of many scientists and scholars, a complex technology and an intricately organized economy. One of the central problems to be solved in Hawaii will be, as elsewhere in the world, the social implications of the new technology and how it should be organized within the life of the state and the human community.

As in the other forty-nine states, our society is moving from the simpler organizational tools—typewriters, dictaphones, telephones, statistical tables, organizational charts—to much more sophisticated technologies of management, most of which involve some form of instrumentation. For example, the electronic computer is providing hitherto inaccessible kinds of data for managerial insight into subtle interactions and complex types of behavior heretofore almost entirely subject to personal interpretation—to "educated guesses." But the development of the so-called "think" industries by no means diminishes the need for human headwork. Just the opposite. The urgent educational problem is how to train the persons who will control and utilize the sharp conclusions of the artificial brains. "The results of computing machines," according to one authority in this growing field, "are only as good as man's directions and his evaluation of their output."

This, then, is one of the important problems well up on the priority list of modern universities. We must learn quickly how to provide society with numbers of people who are not only trained technicians or professional experts, but who have in addition excellent qualities of judgment and intellect and the ethical and human insight which will make it possible to live well with the new technology without which we cannot expect to live at all.

The extension and application of knowledge has become a necessary condition of human welfare and even of the preservation of human dignity and freedom in the 20th century. This is why we must do a better job tomorrow than we have done in the past. We must identify our more able people when they are young, develop their abilities, provide employment and scope and challenge for their varying capacities and talents. Some of these young persons will become scientists and engineers, some teachers, others business executives, public officials, artists, writers—and all of them assets to our society as potential community leaders. While they are students at the University of Hawaii, they must achieve, in addition to their specialties, a mastery of values and aims that give meaning, direction and belief to their world.

Society's Need for Trained Intelligence

The National Scene

One index of the educational requirements of our American economy is the pattern of employment. The occupational opportunities and choices open to young members of society provide insights into the quality of their probable contribution to the nation, the intangible values of their future goods and services, and the whole character of the life our country stands for in the eyes of the world. An outstanding feature of that life since World War II has been the shift in employment toward occupations requiring high levels of training and skill. This shift has helped to produce steadily rising income and to encourage inclinations and interests very favorable to additional study. That economic growth and national prosperity are closely related to the educational caliber of the population has been fully established:

> The fundamental relation of manpower policy to economic policy has been emphatically demonstrated by economists studying the nature of economic growth. More and more, these studies point to the improvement in the quality of human resources as a major source of the increased production. Thus it has been calculated by one authority that for the period 1929 to 1957 the improved education of the work force accounted for more than one-fifth of the increase in real national product. This was a larger share than that provided for by the increase in capital investment. Education combined with the advance of knowledge [through research] accounted altogether for about two-fifths of national growth during this period. Clearly, our manpower program must be designed not only to balance the needs and resources of the present but also to project those needs and resources so that current investment in manpower is shaped to future needs.[1]

That a heavy investment in education is vital both to our own interests in Hawaii and to those of the nation needs no elaborate documentation. Yet the issues involved in shaping public policy and institutional plans are anything but simple. If we are to have an alert citizenship, outstanding competence in government, excellence in sciences, humanities, and arts, to say nothing of foresight and social wisdom in the guidance of our economy—in short, if universities are to contribute to the building of a dynamic and strong community—then our society must be prepared to invest considerably more encouragement and financial support in higher education than it has managed to do thus far.

The kind and complexity of work most required today differs from that of forty or even twenty years ago. We need only to look around us to see that as needs change, a shift occurs in the composition of the labor force. Occupations requiring formal education include a growing proportion of the total supply of workers while those which require relatively little training have been decreasing. School authorities and the public at large are fully aware that in the immediate future the most significant need will be for persons in positions requiring substantial training at the highest levels.

According to the U.S. Department of Labor's occupational outlook studies, the greatest increase in employment between 1950 and 1960 was among professional and technical workers.[2] In these categories the increase numbered almost 50 per cent during the past ten years, at a rate of growth more than three times the average for all other groups. Among scientists, mathematicians and physicists showed the most rapid rate of increase, the number of mathematicians being nearly four and a half times as large in 1960 as in 1950. An exceptionally steep rise, amounting to almost 46 per cent, appeared in the number of elementary and secondary school teachers during the same period. The demand for medical and other health workers mounted during the decade by about 30 per cent. The management group, including officials and proprietors, rose by 7 per cent, a slower rate of growth than for the total employment. Clerical workers in general increased by 39 per cent between 1950 and 1960, at a rate second only to that for professional workers.

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[1] *Manpower Report of the President and a Report on Manpower Requirements, Resources. Utilization, and Training by the United States Department of Labor: Transmitted to the Congress, March, 1963* (U.S. Government Printing Office, 1963), pp. xii-xiii.

[2] Our data on occupational distribution are drawn chiefly from the work already cited, *Manpower Report of the President* (1963), especially pp. 25-30, 202-204.

Employment gains have been generally concentrated in occupations at the top of the educational ladder, in fields where the demand has been the most insistent and where the longest periods of training are required. Within each of these categories just named, the consistent trend has been toward the increased employment of workers at the top of the skill range for the group and toward narrowing opportunities for those with minimum qualifications.

On the basis of the Department of Labor studies, it is safe to conclude that the special concern of higher education should be to prepare individuals for key positions of leadership in fields requiring the most advanced sorts of training. The clear national trends as projected into the 1970's are: (1) a continuation through 1975 of the relatively rapid growth of all white collar occupations, especially professional and technical positions; (2) a slower growth of blue collar occupations as a group, with craftsmen experiencing the most rapid employment increase and with no increase in the employment of laborers; (3) a faster than average growth in service worker employment; and (4) a further decrease in the ranks of farmers and farm laborers (Appendix Table 1).

The Hawaiian Scene

Hawaii is increasingly affected by the same social and economic forces at work elsewhere in the nation and the world. Here, too, the growth in non-manual occupations is a result of accelerated technological advance, expansion of educational and health services, marked increase in the size and complexity of business organizations and emphasis upon research in all fields, especially activities concerned with community development. In the span of slightly more than a half century, we have been transformed from an essentially rural, agrarian community to a complex urban society dependent on commerce, certain light industries, and a variety of service activities for our intricately balanced economic base.

In 1900, of the entire population of the islands (154,000) nearly three-fourths lived in rural districts or small plantation towns. The overwhelming majority of people looked directly or indirectly to agriculture—primarily to sugar production—for a living. Workers from the Orient were arriving in greater numbers each year to man the expanding plantations. Sugar producers relied largely on hand labor for their operations. Honolulu in 1900 was a city of only 39,306, about 25 per cent of the total population of the new Territory.

By 1930, the population of Hawaii reached 368,336 and an urban trend was firmly established. In spite of the partial mechanization of some plantations, the smaller towns continued to flourish because of the rapid increase in sugar production. In 1932 sugar employment reached its all-time high of 55,000, and the resident population of the plantation communities in general rose to a peak of about 110,000. Pineapple production, an insignificant activity in 1900, was a $50 million industry in 1930. While the pineapple towns were altering the traditional look of the Hawaiian rural landscape, Honolulu and the older urban centers on neighbor islands were also developing at a fast rate.

Today Hawaii's population of more than 600,000 is largely urbanized. The causes and the results of the transformation are everywhere visible, on the highways, in the markets, in the skies—everywhere, in short, in the life and work of the islands. Plantation operations in sugar and pineapple have been revolutionized by the new technology, a major factor in the sharp drop in employment in these valuable industries. In sugar employment alone the work force declined from 55,000 in 1932 to only 17,000 in 1958. Throughout the same 25-year period, the population of Hawaii, Kauai, and Maui has been more and more depleted, primarily because of the migration of workers to Oahu for employment.

Meanwhile, new forces have stimulated the complex process of urbanization, reinforcing the original factors of social and economic change. A healthy growth in family incomes has greatly increased the demand for services—creating a need, again, for more urban workers. In addition, the remarkable developments in tourism, defense activities, and overseas shipping and airlines—all of these focusing on Oahu—have tended to concentrate employment in Honolulu. Between 1900 and 1958 the population of the Territory grew by 278 per cent. But during this same half century the residents of Oahu increased in number by 662 per cent. Oahu, comprising but 9 per cent of the land area of Hawaii, accommodates today, thanks to the "urban sprawl," more than three-fourths of our total population.[3]

In 1958 the Bank of Hawaii reported an emphatic trend toward greater specialization in the labor force and a demand for more advanced training.

> Technical developments, automation, and the increasingly complex organization of business require higher levels of ability. Jobs for unskilled labor are declining and openings for a widening range of trained specialists are increasing. This in turn is reflected in the rise in the numbers who are taking college and other training before seeking employment in the Territory.[4]

The findings of the Bank of Hawaii are underscored in the U.S. Census employment figures for Hawaii from 1940 to 1960. It is clear that the changing occupational pattern in Hawaii corresponds quite closely with that of

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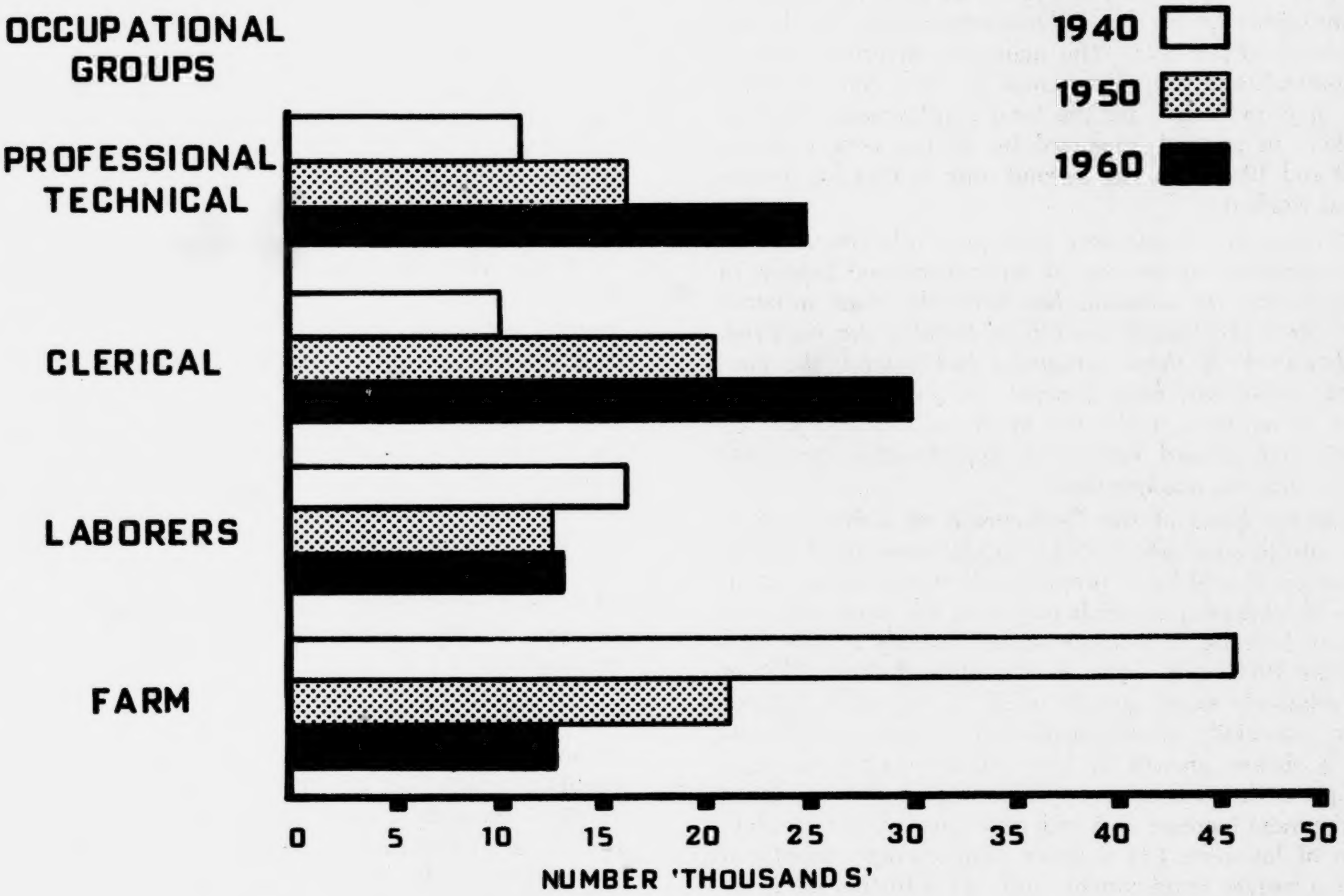
[3] Reports of Department of Health, State of Hawaii.

[4] *1958 Mid-Year Report*, p. 8.

FIGURE 1

EMPLOYMENT TRENDS IN HAWAII



the United States as a whole. The most salient change during the decade from 1940 to 1950 occurred in the local increase among clerical and skilled workers and the decline in the number of farm laborers (Fig. 1). In fact, clerical workers doubled in number during this period while skilled workers increased by 57 per cent. Professional and technical workers experienced the sharpest rise in employment during the same ten-year span, increasing at over twice the rate of growth for all occupations. During the 1950's the accelerated rate of expansion in the clerical work force continued. Gains in employment of semi-skilled workers were less than the overall increases, while employment on farms further declined by 36 per cent. Urban laborers, however, showed a very modest rise after a drop of 14 per cent during the 1950's. The other major occupational groups tended to grow in proportion to the total expansion of the work force (Appendix Table 2).

The General Population Base and Higher Education in Hawaii

Magnitude of the Problem A rising birth rate and increasingly effective medical care have caused an unusual upsurge in the American poulation. Since 1910 our numbers have doubled from 92.4 million to an estimated 185 million in 1962. Between 1930 and 1960 we have increased by approximately 56.5 million, and present projections indicate that about 56 million more will be added to our total population by 1975 (Appendix Table 3) to produce a total of 235 million.

Like the United States as a whole, Hawaii has already undergone one era of rapid rise in population. Now the new State faces another upward stage. Between 1930 and 1960 the population of Hawaii increased approximately 72 per cent, from 368,336 to 632,722. It should be pointed out that published projections of the future population of Hawaii vary, depending on different assumptions.[5] However, a middle range projection by Robert C. Schmitt estimates that the total population of the state may increase by approximately 29 per cent between 1960 and 1975, reaching by that year an expected 818,000 (Fig. 2).

Shifting College-Age Group More important to higher education in Hawaii is the seldom noted shift which is already evident within the upward swing of the total population. Not all

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[5] *Memorandum on Population Projections for Hawaii, 1963–1983* (State of Hawaii Department of Economic Development, May 24, 1963), p. 12.

age groups increase at the same rate. Colleges and universities, like the secondary schools, must necessarily direct their immediate attention to that particular segment of the population which most directly affects them. It we are to plan ahead, if we are to be prepared, in time, to educate our young men and women, we must look primarily at the 18–21 year age-group. And it is within this "college-age" group—sometimes called the 18–21 year-old "cohort" population—that the most significant changes are now taking place.

In the nation as a whole the 18–21 year-old group increased slightly between 1930 and 1944 because of the temporary rise in the birth rate during the post-World War I period (Appendix Table 4). However, the group then declined to a low of approximately 8.5 million in 1955, reflecting the slackening birth rate during the depression of the early 1930's. With the climbing birth rate during and after World War II, the 18–21 year-olds again increased in number to 9.6 million in 1960. The impressive rate of increase is expected to continue through 1975, because of the high record of births during the 1950's. Careful estimates place the overall college-age population at 14.2 million in 1970 and at 15.8 million in 1975, representing increases of 48.2 and 64.1 per cent respectively over the 1960 population.

As shown in Figure 3, trends in the 18–21 year-old group in Hawaii have followed closely the national pattern, but with several slight differences (Appendix Table 5). Between 1940 and 1950 the decrease in Hawaii—from 40,604 to 40,478—was slightly less than the percentage on the mainland. However, the continued decline to a low in 1955 of 35,248 was relatively more pronounced than for the nation as a whole. As throughout the country, the 18–21 year-old population in Hawaii began to increase in the mid-fifties. In 1960 the local college-age group totaled 43,312.

Projections comparable to those for the United States as a whole are available for Hawaii to 1970 (Appendix Tables 4 and 5). *It is important to note that the remarkable increase from 1960 to 1970 of 48.1 per cent for Hawaii's college-age group is nearly identical with that for the entire United States—48.2 per cent.*

FIGURE 2

POPULATION TRENDS AND PROJECTIONS

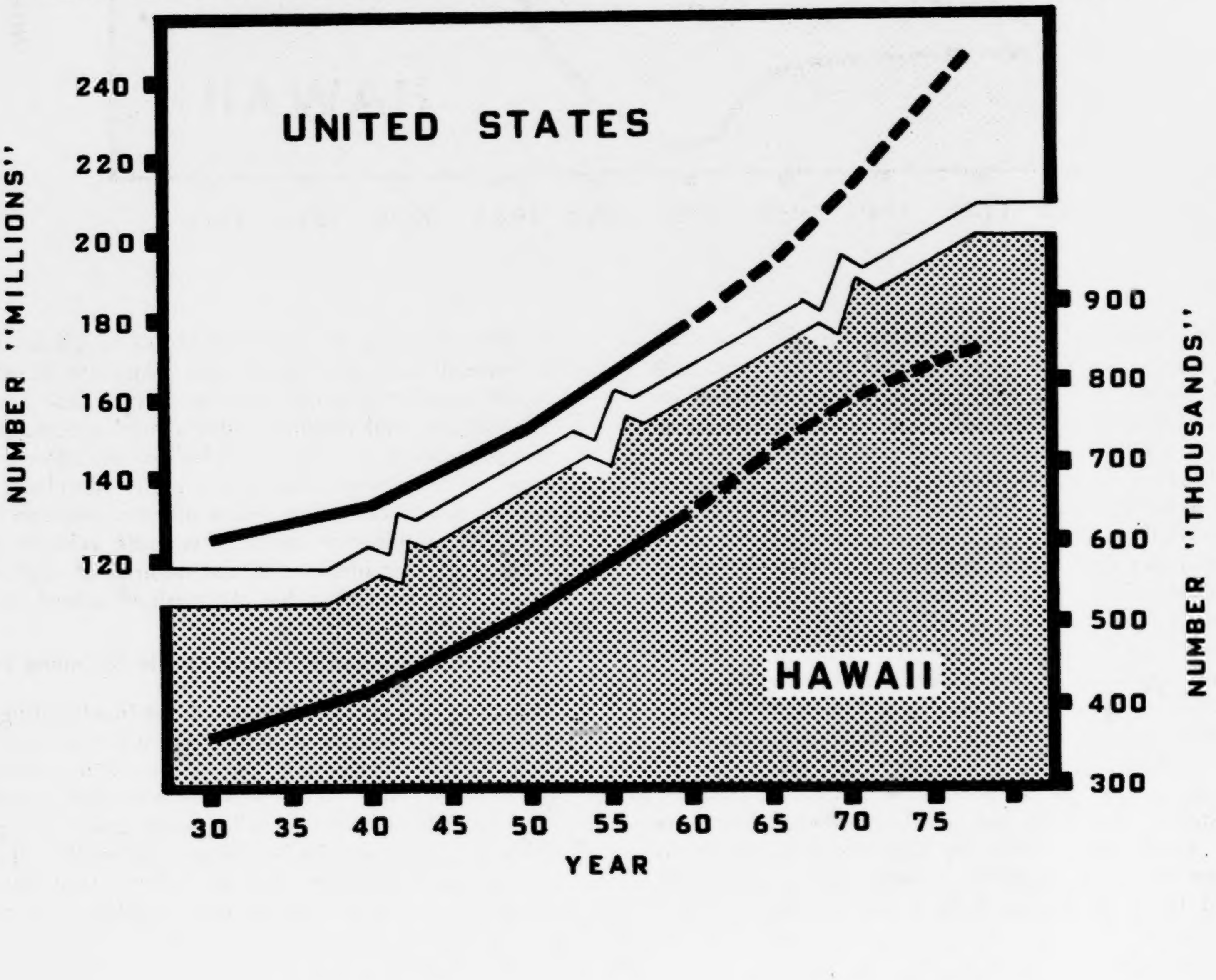
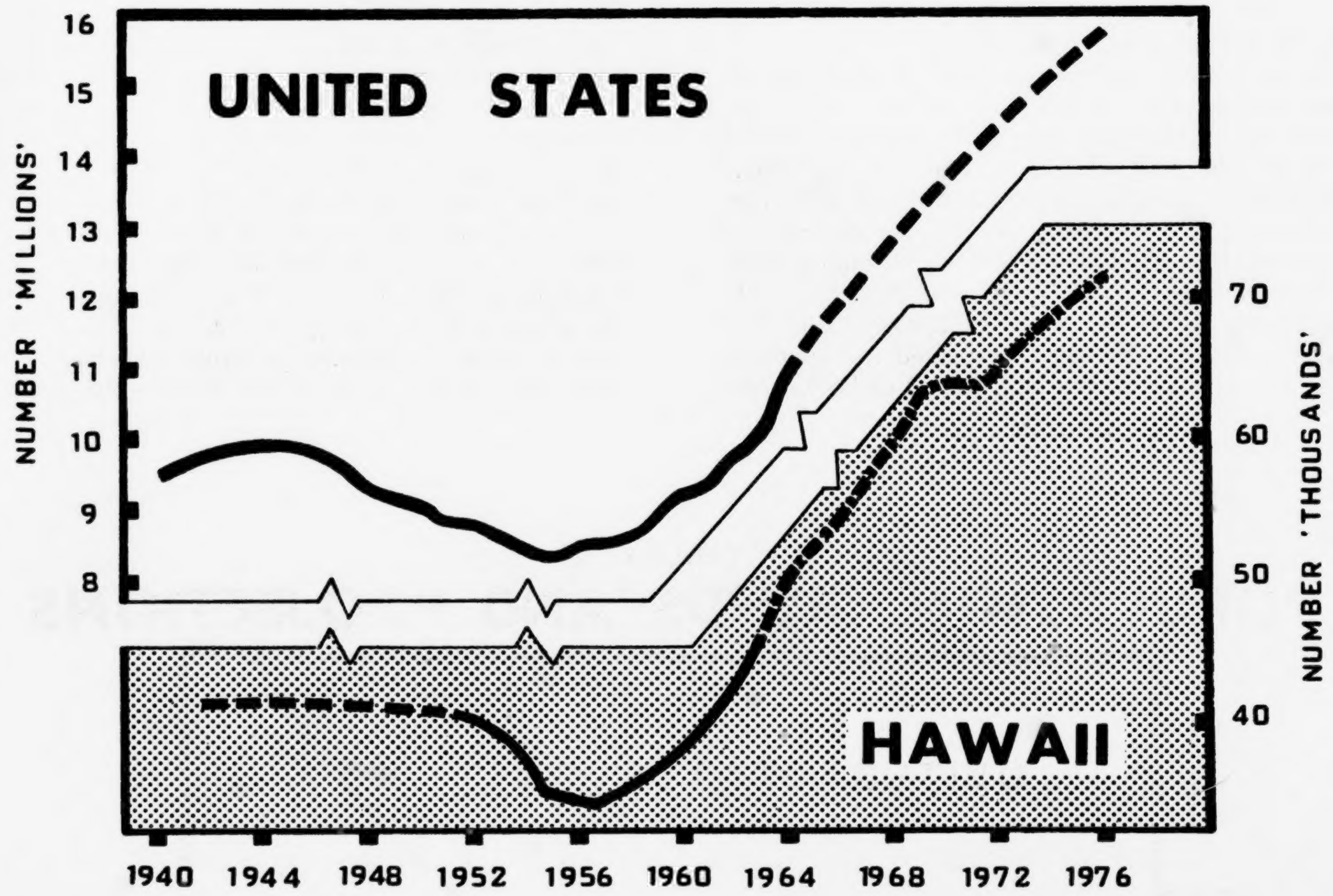


FIGURE 3

18-21 YEAR-OLD COHORT POPULATION TRENDS



Furthermore, data are available for the "accumulated" high school seniors—that is, the sum of high school seniors in four successive years as estimated for Hawaii (Appendix Table 6). The result is similar to the figures for the 18-21 year-old population of Hawaii, as well as for the national college-age group. However, the expected increase of seniors between 1960 and 1970 is somewhat greater: a 61.2 per cent rise as compared with 48.1 per cent in the general 18-21 year-old group in Hawaii. This greater increase is to be expected because it includes a reasonable rise in the pupil retention rate from Grade I to Grade XII—a factor not entering into estimates of the college-age population.

Actual and projected numbers of high school seniors in Hawaii have been compiled for the four major island districts (Appendix Table 7). The data show upward trends in the number of seniors from 1952 to 1961 for all districts, but with the greatest upward push on Oahu. Projected to 1972, the data reveal slight or no increases for the neighbor islands, but a persistent upward trend for Oahu, from 4,073 in 1952 to 7,194 in 1962, reaching an expected 11,595 in 1972. It must be remembered that these projections are based only on the number of pupils who were in Grade I in 1960 who with normal retention rates should become seniors. The proportion, of course, will be expected to vary with interchange between islands as well as interchange with the mainland. However, unless other unforeseen factors introduce a different trend, it is quite safe to project a much greater increase in the number of high school seniors for Oahu than for other island school districts.

Increasing Proportion of Young People Attending College

Rising Aspirations The percentage of youth attending institutions of higher education in the United States may be obtained by comparing the total degree-credit fall enrollment with the 18-21 year-old college-age group (Appendix Table 8). Between 1929-1930 and 1939-1940, the proportion increased from 12.4 to 15.6 per cent, but then dropped to a low of 11.9 per cent in 1943-44 because of enlistments in the armed services. This decrease was followed by a post-war bulge in enrollment, encouraged partly by government support of the education of veterans. The post-war rise in enrollment reached a high of 27.2 per cent in 1949-50. Between 1951-52 and 1961-62, the percentage continued to mount progressively from 24.0 to 37.7. The persistence and strength of the trend (Fig. 4) indicates that the number of young people aspiring to higher education will continue to rise in the future, though perhaps at a slightly diminishing rate. In any event, competition for employment will require constantly higher levels of educational achievement, as professional and technological standards move upward. Opportunities for unskilled employment, especially at a post-high school level, will continue to decrease, thereby forcing on many secondary school graduates a choice between idleness and some form of continuing education.

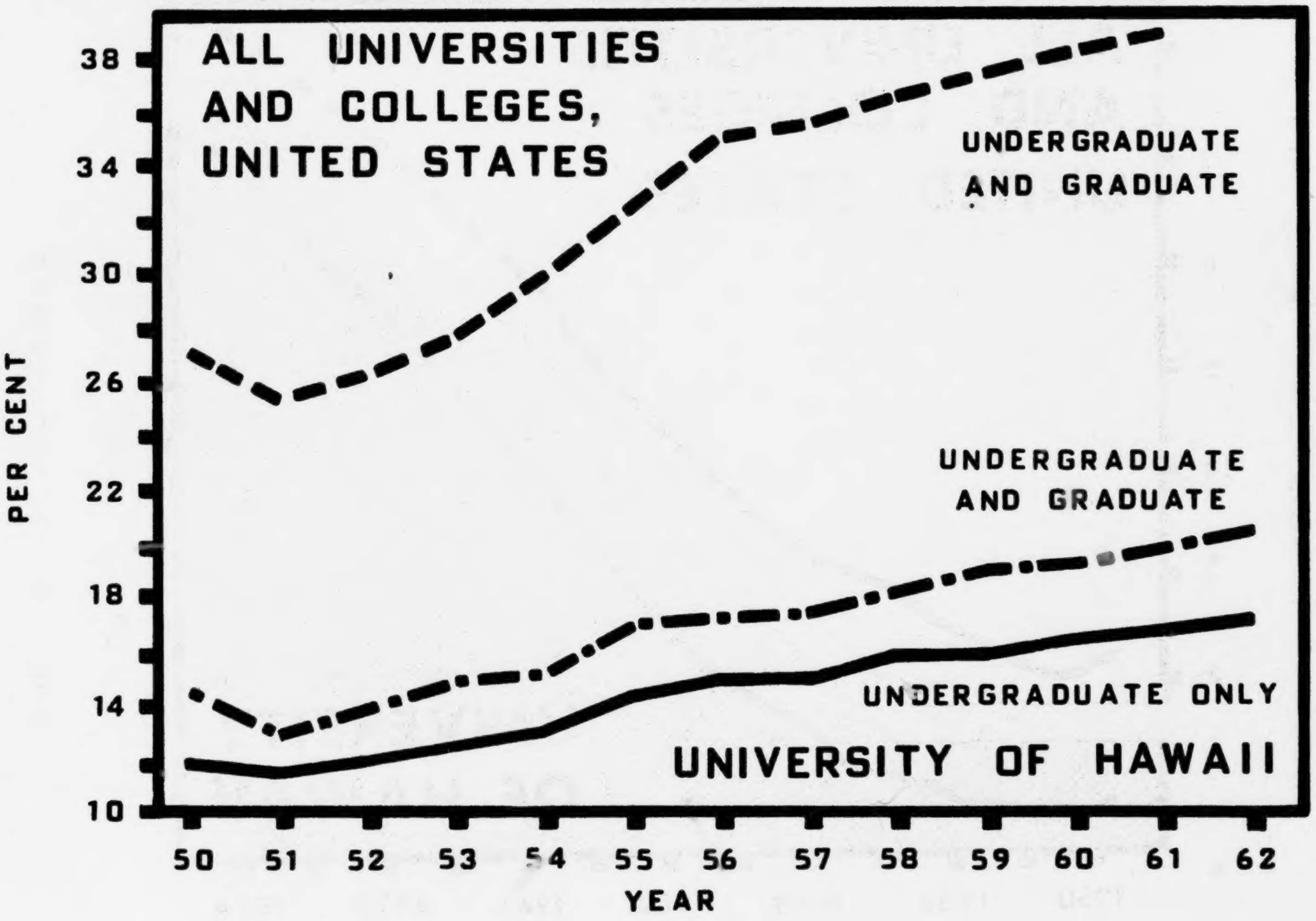
There is, of course, a margin of uncertainty in all attempts to gauge future college enrollments. Such "predictions" are not solely determined by numerical increases in the college-age group. Psychological factors and the matrix of social attitudes—what young people expect from society and what society expects from its younger members—exert pervasive influences. This fact is strikingly illustrated during the fifteen-year period (1940-1955) when the national college-age group markedly decreased in number. Yet during this same period college enrollments rose from 195,000 to 325,000, a phenomenon only partly explained by the returning veterans and their attendance of colleges under the provisions of the G.I. bill.

Obviously, in estimating future enrollments we are confronted with a complex of factors which, combined, have caused and will continue to cause an increasingly higher percentage of our young people to enter college. With these reservations, it is safe to seek guidance by comparing the educational expectations of young people in Hawaii with those of the college-age group on the mainland.

The number of students attending the University of Hawaii can be measured for the purpose of project-

FIGURE 4

DEGREE - CREDIT ENROLLMENT TRENDS OF 18 - 21 YEAR OLD COHORT POPULATION



ing future enrollments by relating student enrollment to the size of (1) the 18-21 year-old group and (2) the high school senior group (Appendix Table 9). In Hawaii, as in the nation as a whole, the proportion attending college has been steadily on the rise (Fig. 4). The percentage of the college-age group attending the University of Hawaii as undergraduates rose almost linearly from 12.6 in 1955-56 to 15.0 in 1962-63. Likewise, in relation to the high school senior population, the percentage also increased, although at a somewhat less marked rate of growth, from 17.5 in 1955-56 to 21.2 in 1962-63.

Two important circumstances that affect the comparison with enrollment totals on the mainland need to be emphasized. The relatively low percentage attending the University of Hawaii is in part a result of out-migration—simply the fact that a substantial number of our high school graduates attend institutions in the continental United States. The second reason for the relatively low percentage is that the figure excludes local high school graduates who enroll in colleges in Hawaii other than the University.

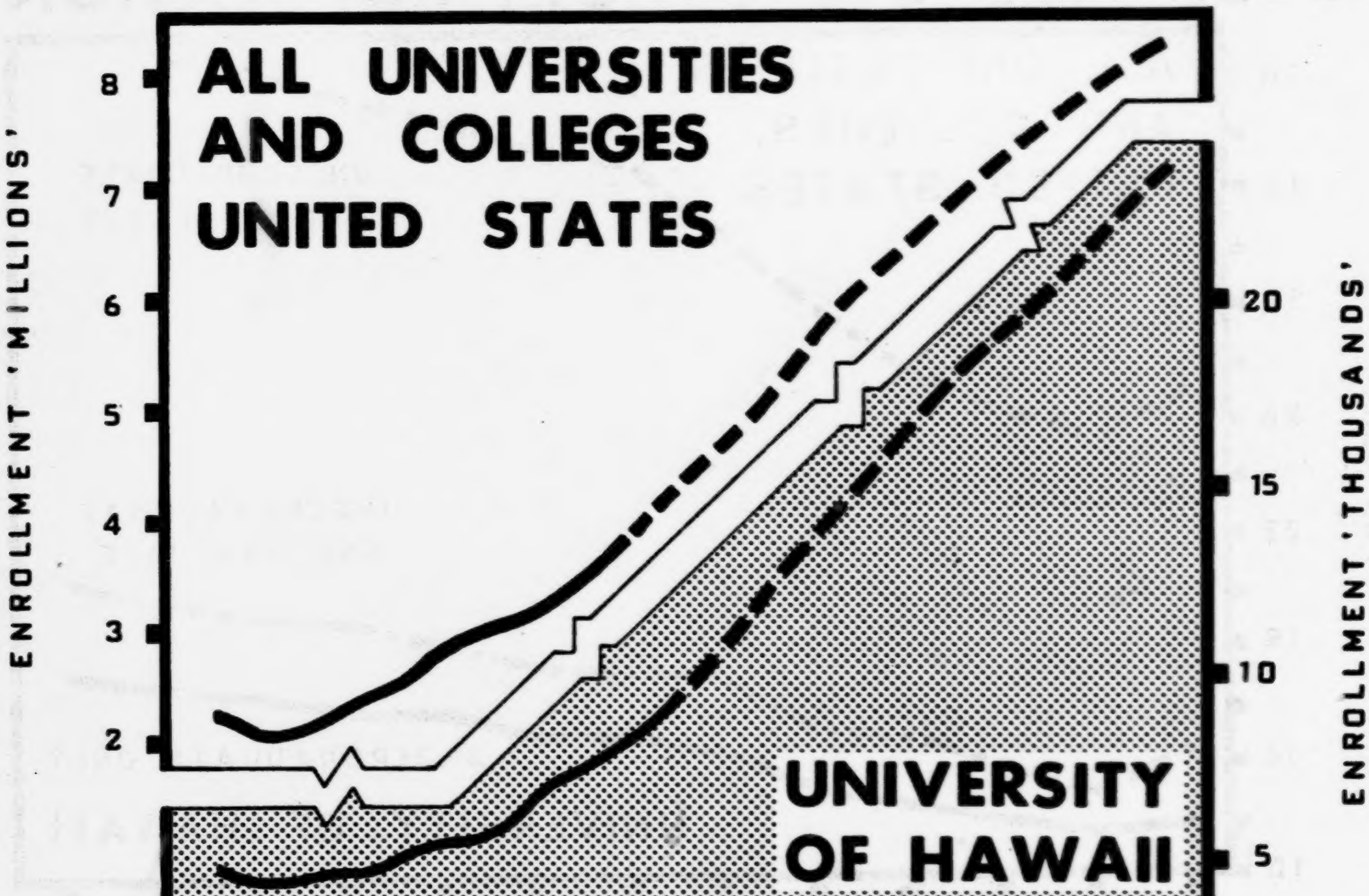
The accuracy of enrollment projections for Hawaii as for the nation as a whole will depend largely on whatever factors control the present trend or on new factors not yet evident. If the trend continues, there is still the question whether it will gradually taper off. There is every reason to believe that the percentage of young people attending college will continue to rise for several years at least, for causes already mentioned in this report. In addition, there is a further obvious reason to prepare for mounting enrollments in Hawaii. As mainland colleges become more and more crowded and unable sometimes to accommodate easily their "home" applicants, a growing proportion of our high school graduates may be obliged to turn to our own state university or to other local colleges for their continuing education.

Enrollment Trends

The National Scene For the nation as a whole, total fall degree-credit enrollment in institutions of higher learning has fluctuated during the past twenty years, but the general movement, of

FIGURE 5

TOTAL DEGREE-CREDIT ENROLLMENT



course, has been steadily upward (Appendix Table 10). During World War II enrollment dipped to a low of 1.2 million in 1943-44, but then revived to a postwar peak of 2.4 million in 1949-50. After another decline in 1951-52, following the Korean War, enrollments increased impressively to 3.9 million in 1961–62 (Fig. 5). Taking 1960 as a base year (Index 100), when there were more than three million students already in college, it is expected that the total national enrollment by 1975–76 will be more than doubled, about 8,325,000 (Index 233.2).

Comparable data for undergraduates and graduates separately are not available. However, graduate enrollment comprised about 10 per cent of the total enrollments over the period 1953-54 to 1960-61.

It is pertinent here to note that nationally there has been an increase in the rate of enrollment in both public and private institutions of higher learning, but that the rate of growth in the public institutions well exceeds that of the private ones. Using 1954 as a base year, enrollment in public institutions shot up by 69 per cent by 1962, whereas enrollment in private institutions rose by a more moderate but substantial 47 per cent over the same period.

Two-Year Colleges

Here it would be well to examine the important role of the two-year colleges on the mainland in meeting the challenge of rising aspirations and mounting numbers. In 1962 enrollment in four-year institutions (3.6 million) was about six times that in junior colleges in the same year (0.6 million). However, since 1954, enrollment in four-year institutions has increased only 65 per cent whereas that in junior colleges has risen by 108 per cent. In 1963, the 700 junior colleges in the United States enrolled more than 800,000. This means that one student out of every four beginning higher education is now attending some junior college. Florida, which only recently embarked upon a state-wide program of junior colleges, estimated that in 1963 sixty-four per cent of its freshmen were in junior colleges. California anticipates that about 80 per cent of its college-bound high school graduates will enter junior colleges by 1970. Many recent surveys of higher education recommend that encouragement be given to the establishment of junior colleges. The U.S. Office of Education survey of higher education in Hawaii endorsed the establishment of junior colleges, and in 1963 the Legislature appropriated funds to the University to conduct a community college feasibility study which was completed and distributed to the members of the Second State Legislature on February 1, 1964.

The Academic Development Plan Committee fully recognizes the probable impact that the establishment of community colleges could have on higher education in Hawaii. However, if the experiences of other states can serve as a useful guide, the Manoa campus will not undergo any significant decline in the size of its student body. Community colleges seem to attract many who otherwise would not go to college at all. Furthermore, even if freshmen and sophomore enrollments at the University do not increase as rapidly as we anticipate without community colleges, the need for planning the programs and curriculums of the Manoa campus is not affected in any significant way. Indeed, history and experience seem to indicate that the work of community colleges would be complementary to our present efforts and would enable the Manoa campus to concentrate more effectively on upper division and graduate instruction as well as on research.

The Hawaiian Scene

Undergraduate and graduate enrollment trends at the University of Hawaii (Fig. 6) are shown in detail in Appendix Table 11 and are summarized by five-year intervals in Tables 1 and 2 following. Enrollment is expressed as total degree-credit, daytime students registered in the fall semester.

As in mainland institutions, the University of Hawaii's enrollment increased in post-war years, declined in the early 1950's, but then underwent a progressive increase to 1962–63. In fact our rate of growth has been somewhat ahead of that for the nation as a whole. Graduate enrollment in particular has increased more rapidly than undergraduate enrollment, apart from the presence of East-West Center students at the University. The tables clearly show that we must continue to provide graduate opportunities for the students from Hawaii if they are to be able to compete. In many occupations where once the baccalaureate degree sufficed, the master's is now necessary. And there is no indication that the trend will be reversed. That the people of Hawaii are well aware of this condition is evidenced in the fact that of the individuals enrolled in graduate work in 1962–63, 70 per cent were from Hawaii. Only 13 per cent came from the mainland and 17 per cent from foreign countries.[6]

Several projections of enrollment at the University of Hawaii have been made by various agencies employing different bases and assumptions (e.g. number of births, number of Grade I pupils, number of 18-21 year-olds, number of high school seniors). In most cases, we have found it necessary to revise these earlier projections upward in the light of accumulating enrollment records. Time may show that our own estimates err on the low rather than the high side.

For undergraduates, we have used the high school senior population as given in the 1962 Health, Education and Welfare (HEW) Report on the University, but translated over successive years into a four-year total. In this way we have been able roughly to relate high school seniors as a group to the total university enrollment, not merely to the freshmen group. We have assumed an increase in the percentage of enrollees midway between a straight-line projection and an "asymptotic curvilinear projection"—in other words, our own projection allows eventually for a diminishing rate of increase. For graduates, we have used data derived from the recent Harland Bartholomew reports on the

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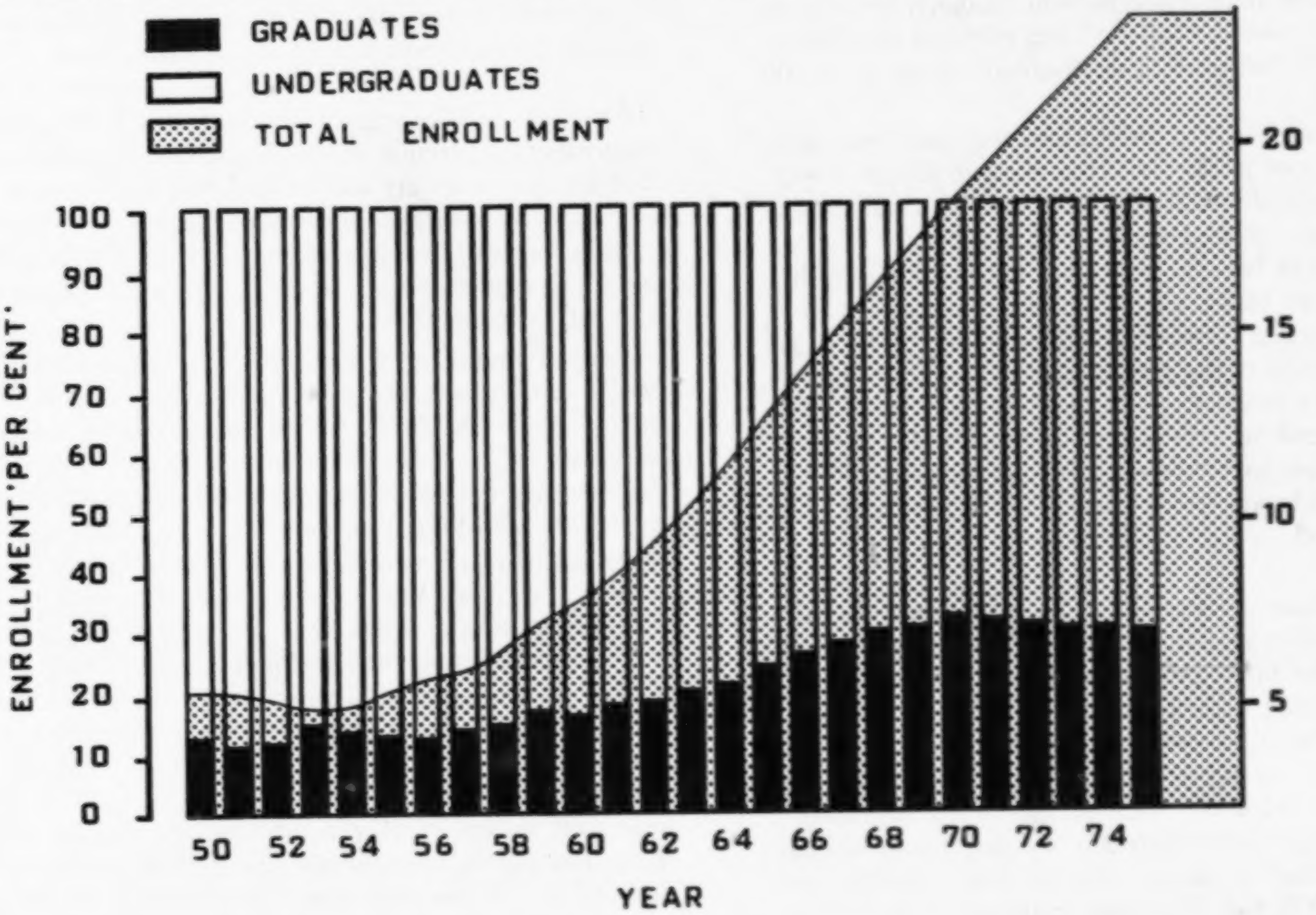
[6] *President's Report*, University of Hawaii, 1962–63, p. 4.

FIGURE 6

UNIVERSITY OF HAWAII TOTAL DEGREE-CREDIT DAYTIME ENROLLMENT TRENDS



University, adjusted to permit a 2.5 per cent increase until 1968 and a 1.0 per cent increase per year thereafter.

Projections as such, regardless of how they are reached, express reasonable probabilities, not prophecies. Only small significance should perhaps be attached to the interesting fact that while all three of the most recent projections yield figures that are about the same order of magnitude, ours has turned out to be the highest of all. To illustrate, for undergraduates on the Manoa campus in 1970, excluding East-West Center grantees, the HEW Report, the Bartholomew Report,

TABLE 1

ACTUAL AND PROJECTED ENROLLMENT OF ALL CLASSIFIED AND UNCLASSIFIED UNDERGRADUATES
UNIVERSITY OF HAWAII, 1950–51 to 1975–76

Year	Manoa Regular	Manoa E-W Center	Hilo	Total	Index
1950–51	4,272	–	86	4,358	67.5
1955–56	4,444	–	228	4,672	72.4
1960–61	6,197	–	260	6,457	100.0
		(Projected)			
1965–66	9,376	113	506	9,995	154.8
1970–71	11,853	223	640	12,716	196.9
1975–76	15,356	230	850	16,436	254.5

Note: Actual enrollment data for the first semester 1963–64 are—Manoa undergraduates, 8,441; Hilo undergraduates, 355; total, 8,796.

TABLE 2

ACTUAL AND PROJECTED ENROLLMENT OF ALL CLASSIFIED AND UNCLASSIFIED GRADUATES, INCLUDING FIFTH YEAR AND PROFESSIONAL CERTIFICATE STUDENTS, UNIVERSITY OF HAWAII, 1950-51 to 1975-76

	Manoa			
Year	Regular	E-W Center	Total	Index
1950-51	629	–	629	47.5
1955-56	742	–	742	56.1
1960-61	1,323	–	1,323	100.0
		(Projected)		
1965-66	2,203	1,022	3,225	243.7
1970-71	3,898	2,012	5,910	446.7
1975-76	5,032	2,070	7,102	536.8

Note: Actual enrollment data for the first semester for 1963-64 give a total of 2,025, inclusive of East-West Center grantees.

and the present Committee's projections come up with different totals: respectively 11,590, 11,261, and 11,853.

As shown in Table 1, undergraduate enrollment at the University of Hawaii, including the Hilo campus, is expected to reach more than 16,000 in 1975-76, two and one-half times the number enrolled in 1960-61.

Graduate enrollment projections are given in Table 2. *Including East-West Center students, the number is expected to reach over 7,000 in 1975-76, a five-fold increase over 1960-61.*

The total enrollment for the University of Hawaii is shown from 1950-51 and projected from 1963-64 to 1975-76 in Table 3. *The total student body is expected to exceed 23,000 in 1975-76, a three-fold increase over 1960-61.* We must emphasize that these figures *do not* include new degree-credit registrants in the second semester, in evening credit classes, and in the summer session. To cover these categories, the figures in Table 3 should be increased by about 70 per cent for undergraduates and by about 100 per cent for graduates. There are surprisingly large numbers of local undergraduates and graduates who pursue degree-credit programs in night and summer classes. They have not been included because these programs are largely self-supporting and utilize existing facilities. For similar reasons we have not included the large enrollment of non-degree students in night and evening classes.

Some of the enrollees included in the foregoing figures are part-time students. The "full-time student equivalent" (FTE) has been included in Table 3 and Appendix Table 12 for use in a later section of the Plan in which we take up the problem of the student-faculty ratio (SFR). The number of full-time equivalent students is computed on the basis of total credits of enrollment divided by 16, an average full-time student load. This calculation results in an average conversion factor of 85.55 per cent of total, degree-credit, daytime enrollment in the first semester as the FTE student load.

Trends in the Award of College Degrees

The National Scene The number of college degrees awarded in the United States as a whole has been projected to 1969-70 (Appendix Table 13). Compared with 1960-61, national gains of 81 per cent, 78 per cent and 71 per cent are expected by 1969-70 in the three degree levels—Bachelor's, Master's and Doctor's—respectively.

TABLE 3

TOTAL DEGREE-CREDIT, FALL, DAYTIME ENROLLMENT, UNIVERSITY OF HAWAII, 1950-51 TO 1962-63, AND PROJECTED FROM 1962-63 TO 1975-76, INCLUDING AN ESTIMATE OF FULL-TIME EQUIVALENT (FTE) STUDENTS

Year	Total Enrollment	FTE	Index
1950-51	4,987	4,266	64.1
1955-56	5,414	4,632	69.6
1960-61	7,780	6,656	100.0
	(Projected)		
1965-66	13,220	11,310	169.9
1970-71	18,626	15,934	239.4
1975-76	23,538	20,137	302.6

The Hawaiian Scene Trends in the award of college degrees at the University of Hawaii have also been projected (Appendix Table 14) assuming (1) earned bachelor's degrees will constitute 15 per cent of the total undergraduate fall enrollment, (2) earned advanced degrees (other than diplomas and certificates will constitute 8 per cent of the total graduate fall enrollment, and (3) earned doctor's degrees will constitute 10 per cent of earned master's degrees. These are the percentages that have been approximated in recent years. In projecting into the future, the percentages for advanced degrees may be too low because many of the newer degree programs have not yet started to produce their expected output. Compared with 1960-61, gains of about 100 per cent, at least 360 per cent and at least 600 per cent are anticipated by 1969-70 in the three degree levels. These gains are much higher than those anticipated nationally and reflect the fact that the University will be expected to accommodate relatively more of its residents at the bachelor's level and will be faced with the task of catching up with the mainland in developing its advanced graduate program. Our advanced graduate program in 1960-61 was relatively small compared with many mainland institutions of comparable size. In 1974-75, the output is expected to include 2,190 bachelor's, 500 master's and 50 doctor's degrees.

Factors Influencing Enrollment at the University of Hawaii

Hawaii's Private Colleges Data for the summer and fall enrollment in the University of Hawaii and in private institutions (Chaminade College, Church College, Maunaolu College, Honolulu Christian College, and Jackson College) included in the HEW report show that for 1961 the "private institutions enrolled 18.7 per cent of the undergraduate degree-credit students; 14.6 per cent of all students regardless of classification; and 12.7 per cent of all degree-credit students regardless of level."

Nationwide total degree-credit enrollment figures for 1961 show 39.6 per cent enrolled in private institutions and 60.4 per cent in public institutions, as contrasted with 12.7 per cent in private and 87.3 per cent in public institutions in Hawaii. The State is thus assuming a greater share of the educational obligations than do most other states in the Union. It is even greater than in the four western states, where the percentages are respectively about 20 and 80 per cent. However, it should be borne in mind that in the nation as a whole, the trend is strongly toward a relatively greater enrollment in public institutions of higher education.

The University of Hawaii stands ready to encourage other local institutions of higher learning in any way possible and has already played an advisory role in assisting their development plans. However, there is little reason to believe that the future growth of the private colleges will significantly lighten the educational responsibilities of the University.

Mainland-Hawaii Student Interchange Nationwide statistics compiled for fall undergraduate enrollment in 1958 show that Hawaii produced 9,698 college students, of whom 3,698 or 38.1 per cent enrolled in mainland institutions. In the percentage of out-migration, Hawaii was the fifth highest of all the states, exceeded only by Delaware (48.2 per cent), New Jersey (41.6 per cent), Nevada (39.6 per cent), and Connecticut (39.0 per cent), and equalled only by Idaho.

In contrast, of the 6,867 undergraduate students enrolled in Hawaii in 1958, only 867 or 12.6 per cent indicated that they were residents of mainland states.[7] The percentage of in-state migration was higher in all other states except Arkansas (12.5 per cent), New Jersey (11.8 per cent), Louisiana (10.3 per cent), Alaska (9.6 per cent), California (9.0 per cent), and Texas (8.2 per cent).

Data for 1961 in the HEW report show the same large out-migration of Hawaii students to mainland institutions. In addition, the tables show that relatively more graduates of private high schools in Hawaii attend mainland institutions than is true of graduates of our public high schools.

Per cent of college population	Originating from Public high schools	Originating from Private high schools	Originating from Both
Attending Mainland Colleges	29.74	54.04	37.68
Attending Local Colleges	70.26	45.96	62.32
Total	100.00	100.00	100.00

Mainland and Foreign Students Fall enrollment data for the University of Hawaii over the period 1950 to 1963 show that the percentage of out-of-state students (graduates and undergraduates) attending the University has increased from approximately 4 per cent in 1950 to approximately 17 per cent in 1963. The rise has been caused partly by a larger number of students from foreign countries, especially by the East-West Center enrollees, with the result that the student body of the University is becoming more and more international in composition.

In October 1963, there were enrolled on the Manoa campus students from every state of the Union and from the District of Columbia, 1,072 in all, or about 10 per cent of the entire number of students taking degree programs. Students from abroad, 689 in number, came from 54 nations and territories—from both Americas, Asia, Africa, Europe, and Oceania.

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[7] Because no out-of-state tuition penalty is assessed, figures for out-of-state students attending the University of Hawaii are probably inaccurate. These figures are further complicated by students who are military dependents. Until an acceptable definition of "out-of-state student" is developed, figures so used can be only gross estimates.

Human Resources in Perspective

In any analysis of our need for a greater supply of educated talent we must bear in mind that we are dealing not only with figures but also with human beings. "There is a certain repugnant unreality about the whole manpower concept," writes one expert in the utilization of human resources. "There is a dangerous tendency to translate researchers and engineers into so many heads of cabbage and to assume blithely that the same laws of supply and demand regulate the production of brains and butter." In his important book, a study prepared for the College Entrance Examination Board in 1956—and "before Sputnik"—Charles C. Cole, Jr., reminds us that increasing the quantity of things does not necessarily improve their quality. The same principle applies to human beings: "That is why careful attention must be given to the education and nurture of promising individuals who can be found as well as their raw numbers."*

Conclusion

In this same qualified pragmatic spirit, we close this section of the Development Plan in which we have sought to uncover and clarify some of the underlying causes of the urgent problem in higher education facing the people of Hawaii. We have also hoped to place that problem in its broader social and human context and to sketch out some of the most complex issues. Our chief findings need no extensive summary.

(1) There is every reason to believe that the enrollment in higher education estimated for the 1970's will not exceed society's requirements for persons with such training. Indeed, there seems to be general agreement among authorities in the field of human resources that society's demand for trained intelligence will remain well ahead of supply.

(2) By 1975-76 between 20,000 and 25,000 students—according to our own latest estimates, about 23,000—will be enrolled on the Manoa campus or at one or another of the University's centers, if facilities are provided.

(3) By 1975-76 between 20,000 and 25,000 students—according to our own latest estimates, about 23,000—will be enrolled on the Manoa campus or at one or another of the University's centers, if facilities are provided.

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*Charles C. Cole, Jr., *Encouraging Scientific Talent: A Study of America's Able Students Who Are Lost to College and of Ways of Attracting Them to College and Science Careers*, College Entrance Examination Board (New York, 1956), p. 53.

Part II: GENERAL POLICIES

THE APPROACH TO THE PLAN

The major portion of the plan presented here deals with instructional programs, research activities, public services both in their community and international perspective, staff needs, space and facility requirements, and costs and potential sources of funds. In approaching the task, we have tried to keep in mind the development of the University extending over approximately the next ten years, i.e., the longer range needs which nevertheless must influence many of our immediate decisions. Our concerns therefore contrast significantly with those of short range plans, of which an annual or biennial budget would be a familiar example. The amount of detail in which we get involved will, on the whole, be permissibly smaller. There will be a different mixture, indeed a different emphasis, in our special concern with the *desirable* as well as the *practicable*. We assume that there is no radical contradiction between the two concerns—between values and stubborn facts—and that we are justified in concentrating attention upon features of the University which especially lend themselves to modification, promising expansion and new standards of achievement and excellence.

Though a state agency, the University carries a strong mandate for rendering appropriate educational services not only on behalf of the State of Hawaii, but also for the common good of the nation and the world. The term *appropriate* here implies standards, judgments of quality, comparable to those which apply to leading American universities and which carry on the noble tradition of the university system in the Western world. In each phase of our quantitative expansion, we shall find ourselves faced with qualitative problems and choices that test our good faith as individuals and our resourcefulness as a society. The amalgam of equality of opportunity with standards of excellence has been the dominant paradox and problem of American higher education, at the same time that it has demonstrated historically our characteristic hope and promise as a people.

The following survey of the educational goals and functions of the University of Hawaii is thus an ambitious one, even though it is confined within certain limits. For example, the plan contains no itemized statements of the objectives of departments or their individual needs and expectations. Neither is this a study of specific curricular problems, although the provision throughout the University as a whole for continual evaluation and improvement of the instructional programs is listed as one of our compelling major purposes. The analysis of space needs and of the expansion of facilities is presented likewise in terms of overall institutional requirements, as based on qualitative as well as quantitative distinctions, and upon norms suggested by prevailing standards in selected mainland institutions. Thus the plan contains no detailed specifications for particular buildings or other physical facilities. It will, however, provide useful information to a companion study on campus development which is expected to show how sound planning for all future buildings and facilities must proceed from preliminary findings and assumptions about the necessary land area required to accommodate desired types of structures.

In spite of the fact that the committee tried to consider as many aspects of the University's academic program as possible, there are understandably some omissions. It certainly should not be interpreted in any way as indicative of either lack of interest or disapproval on the part of the committee if a particular program is not herein analyzed. There were a number of reasons for omitting such discussions. In some instances the committee members, conscious of their own limitations, felt that a given field was beyond their competence, and rather than do violence to it they preferred to leave the matter for future groups whose competencies were greater in these fields. There were still other areas where present complications were of such a nature that until they are resolved by the people now dealing with them it seemed that no useful service would be provided by discussing them in this document. And finally there were areas where it simply seemed that the present directions were quite correct and that to take time to point out that all seemed relatively well would hardly be a useful use of the readers' time.

Within such stipulated boundaries, the four main objectives of the plan are as follows:

(1) To define the present role and purpose of each college or other major activity of the University in fulfilling the threefold responsibility to give instruction, carry on research, and provide public service.

(2) To project requirements for expanded or new programs, staff, and capital improvements.

(3) To analyze and project requirements for higher education and skilled services to peoples of the Pacific Basin.

(4) To analyze and project costs of higher public education in Hawaii, and to suggest sources of support whereby the total financial obligation may be met.

PLANNING FOR QUALITY

Primary emphasis in the years immediately ahead will be placed on increased quality for present programs rather than the expansion of old or the addition of new ones. Quality in higher education, rather than mere increased quantity, is rapidly becoming a national obsession in response to ever greater demands on individual intellect. Other public and private colleges and universities likewise are stressing improved quality. The University of Hawaii must keep pace; indeed, the more so lest we fall behind in the training of our skilled youth and suffer an adverse impact on our economic and cultural future.

Although most of this development plan will deal with individual collegiate programs, there are a number of overarching policies and campus-wide procedures which deserve special emphasis and preliminary review.

Curriculum Planning

Curriculum Modification

A cardinal operating principle of any contemporary university which seeks to be competent, let alone excellent, is that its curriculums must be continuously modified to reflect the rapid changes taking place in the area and configuration of man's knowledge. Various extrapolations—such as that by the year 2000 the "amount" known about the natural sciences will be about one hundredfold greater than in 1900—give arresting, if necessarily vague, illustrations of the problem facing all universities which pretend to be universal even within the established disciplines. Course content, course organization, textbooks, in many cases instructional techniques as well, must be under continuous examination for their relevancy to the changing body of knowledge.

One aspect of curricular change may be to shift and meld the compartments into which fields of knowledge are divided for the convenience of teacher, student, and —least important—for the university administrator. New departments are created to house new configurations of learning: e.g., the departments of Asian Studies, Biochemistry and Biophysics, Linguistics. Existing departments expand to offer new courses: e.g., Tagalog, Economic Development, Molecular Genetics.

Indeed the natural, easy course for university development may be described as a one-way stretch. The catalogs of the University of Hawaii for the past several years record the mounting birth rate of new courses and a low death rate for old. In 1960, 83 catalog pages were requred to list the courses offered for credit; in 1961, 94; in 1962, 127; in 1963, 142. Under the organizational structure of the University, primary responsibility for the creation and abolition of courses rests with the respective colleges, operating within their academic jurisdictions and budgets. However, the central University administration has a responsibility for leadership, in collaboration with college deans, to ensure that courses are planned to use effectively the resources of the University.

An immediate goal of such leadership is an *overall reduction in the number of courses now listed.* We believe that the subject matter of many disciplines has been divided into too many courses, and that this proliferation of courses is both an unnecessary form of expansion and poor education. Both students and faculty are overloaded in terms of preparation and class hours, for multiplication of excess courses leads directly to low enrollments per class and wasteful use of teaching manpower.

Curricular change over the next decade will reflect two influences. One is the tendency, already marked in the physical and biological sciences, towards interdisciplinary investigation and teaching, as illustrated by the fields of geophysics, marine biology, and genetics. Important pioneering work in interdisciplinary instruction is under way in the Asian Studies and American Studies programs, and in special courses of orientation offered for short-term overseas students, but generally —as throughout the nation—instruction organized to cut across departmental lines is exceptional in the social sciences and humanities. The example of the natural sciences suggest that efforts to synthesize knowledge within areas broader than those delineated by the traditional departments will stimulate both the acquisition and dissemination of knowledge.

Improved Standards of Secondary Schools

The second influence is the improving standards of the secondary schools. Students coming to the University have made significantly higher scores on the standardized entrance examinations over the past several years, and continued improvement in the quality of their education through the high school is to be expected. Furthermore, the amount of mathematics, science, and foreign languages they have studied in elementary and secondary schools has risen markedly, and will continue to rise. Consequently the University will be able, progressively, to improve standards and the level of achievement of its graduates. Increasingly over the next decade basic courses in the subjects upgraded by the high schools can be upgraded or discontinued by the University, permitting the student more time and the University more resources for adding to the upper reaches of the curriculum.

As the quality of its students rises, the University will be obliged to give increasing attention to those with exceptional ability and capacity. More high school seniors of outstanding maturity and academic preparation should be enrolled for selected University courses, or in rarer cases enrolled as full-time freshmen. The honors program for undergraduates should be participated in by departments across the campus, rather than by a relatively few, as today. Special class sections for selected and honors students must be both homogeneous and of small size for maximum efficacy. Graduate programs should increasingly provide for student participation in seminars and other forums for the presentation of research papers.

Diversity and the Common Fund of Knowledge A notable trend in the recent development of the University has been a tendency to require lower division students to study more subjects of broad, liberalizing content, leaving until the last two undergraduate years and for graduate study the more highly specialized courses. Latter sections of this Plan reflect the decisions of the Colleges of Business Administration, Education, and Nursing to follow a pattern of deferring most technical instruction until the student has had considerable undergraduate experience in the liberal arts and sciences.

The decision has been arrived at by each college individually. It results partly from the widening realization that the rate of technological and institutional change makes rapidly obsolescent the content of courses which stress method rather than principle. Also widely understood is the necessity of training leaders, in whatever field, to be aware of the social and humanistic aspects of their work.

The curriculum changes later proposed for and by the colleges suggest an organizational principle for the overall University curriculum, and a standard: that each student receiving a baccalaureate from the University have successfully undertaken a scholastic program which encompasses at least a minimal portion of that area which is expected to be understood by an educated man in America, regardless of his area of special interest. Judging by the current course requirements of the several colleges of the University, this minimal expectation includes adequacy in the use of English, written and spoken; a general knowledge of world history; the study of a science. Beyond this common core, there is a wide diversity of courses and expectations among the several colleges.

Many American colleges have sought to insure the transmission of a fundamental core of learning by requiring all undergraduates, or all lower division students, to take essentially the same programs. Difficulties arise, particularly in a large state university, because there is no consensus as to the subjects which should comprise the central core, and because students are eager to specialize early—and are encouraged to do so.

A Freshman Core A uniform curriculum for all undergraduates at the University of Hawaii does not now seem well suited for its diverse student body and colleges. It would not require much change, however (except in the College of Engineering), to establish a common fundament for the freshman year—English, Speech, World History, a science; Physical Education and R.O.T.C. as may be required. Another course, chosen to fit the curriculum of the student's college, could be added, if five or more "solid" courses continue to be the normal course load.

It would emphasize the universality of the basic curriculum if all students were to be registered in the College of Arts and Sciences in their freshman year. The other colleges could then admit students as sophomores on the basis of the record of the first year in college, a more reliable basis than high school records or college entrance tests. If this arrangement works well, the University should then explore the feasibility of making all professional colleges upper division and graduate level in scope. Moreover, this academic structure would more readily accommodate the transfer of students from community colleges, should they be established.

The identification of a relatively few courses adjudged to be of importance for all students would permit the University to concentrate its resources in achieving a high quality of instruction at these focal points. To the courses could be assigned superior teachers with the best teaching aids at the disposal of the University. Appropriate recognition of excellence in teaching, in promotion and otherwise, could more readily be given to such teachers once the importance of their task is highlighted.

Academic Calendar Closely related to curriculum development are the institutional arrangements for ordering instruction, the calendar and the credit hour. It may be that the traditional academic calendar, consisting of two semesters and a summer session, is not the best division of the year for the University of Hawaii, given its clientele, climate and physical plant. An increasing number of mainland universities are turning from the semester calendar to a quarter or trimester division. Others, such as the University of Southern California, are questioning the value of the credit hour accounting in setting standards for the awarding of degrees. In the period ahead, the University of Hawaii will give careful thought to its calendar and credit system to see how they may better accommodate a changing volume and pattern of instruction.

Methods and Techniques of Instruction

It is time to turn now to the classroom itself—the major forum in the university for the communication of information, opinion and ideas. Here we may briefly note some of the debatable, and necessarily experimental, methods of instruction which we should expect to see and hear much more of during the next ten years.

These emerging possibilities may be classified under a number of overlapping, not mutually exclusive heads:

(1) *There will be some much larger classes.* This will involve the reorganization of instruction and the student-faculty-ratio in such a way as to: (a) use the selected superior teacher for large lecture classes; and (b) supplement such lectures with guided discussion in smaller groups, supervised by junior faculty, including graduate assistants.

(2) *There will be numerous small classes.* The purpose here is to develop the small "honors" section or tutorial group to encourage more independent study at the (favorably motivated) student's rate of progress.

(3) *There will be wider use of comprehensive examinations.* Methods of comprehensive examinations will be developed to permit a greater number of qualified students to proceed at their own pace to advanced standing.

(4) *Various technological aids will be gradually improved.* The recommendation here refers to the employment in certain courses and situations of: (a) teaching-machines and new methods of programmed learning; and (b)closed-circuit television or sound film, accompanied by controlled experiments concerning the learning process.

Having recognized these possibilities, it should be pointed out that their development—the introduction of closed-circuit television for instructional purposes, for example—will probably prove no easy panacea for solving the critical enrollment problem. The magic of the televised classroom is as yet a very limited and rather costly magic. We quote the cautionary findings of the Technical Committee on Higher Education in California, in their relatively recent report (1960):[1]

> *The Use of Newer Instructional Techniques*
>
> One center of controversy within the area of teaching techniques is the wider use of instructional television, which presents a complex problem that merits careful study. No evidence exists at present to indicate definitely just how effective television can be as an instructional device. Minor experimental work is currently being conducted within the University and in one or two of the state colleges. Whether educational television will, in effect, save the taxpayer's dollars is presently unknown; what little evidence exists is not reassuring. Much the same situation exists with respect to such instructional apparatus as learning machines and similar devises. For the present, all that can be stated with certainty is that the question of their general adoption deserves further study. Here again fundamental research is needed and would doubtless pay dividends.

Academic Programs

Undergraduate Programs As a maturing university, Hawaii has become increasingly concerned with its graduate and professional programs. This is as it should be, but development of the academic superstructure should not be allowed to weaken the foundation, an undergraduate program with adequate scope and high standards. Without a strong underpinning the graduate programs would inevitably suffer. Equally important, so would the education of our students who go to the mainland for graduate training, or who terminate their formal training here with the baccalaureate.

This by way of caution, for there is no evidence that the University has built up its advanced instruction and research at the expense of its primary concern, the undergraduate program. However, some facilities and opportunities for undergraduate students should be strengthened to help them attain the best possible education. These include:

(1) More adequate academic advising, particularly for undergraduates in the College of Arts and Sciences who do not choose a "major" (and thereby an advisor) until the junior year. It is strongly recommended that a system of quasi-permanent advisors be established so that each entering freshman student would be assigned a specific member of the faculty as his academic advisor for two years. A much-needed system of pre-registration of students could be implemented under this plan.

(2) A strengthened and expanded honors program for especially gifted students. The present program is ambitious for the students, but has inadequate resources and therefore too little participation, even within the College of Arts and Sciences.

(3) More and better facilities for study are needed to enable the student to undertake increasing responsibility for his own education, to become more active and less dependent on the instructor. Such facilities should include substantially expanded language and science laboratories; an improved undergraduate library; more indoor study areas and outdoor "study parks" in shaded areas; a fuller range of extracurricular intellectual and cultural activities.

More experiments, as carefully controlled as can be, should be conducted with television, audio-visual aids, programmed teaching machines, and other teaching aids, so that the work of the faculty teaching undergraduate students can be effectively supplemented with the best devices an imaginative technology provides. Finally, the curricular review previously discussed should be pushed with special vigor in the undergraduate offerings to ensure that they meet the needs of the students and put to good use the facilities available for their instruction.

Research and graduate level teaching are closely interrelated. Adequate and appropriate expansion of research and correlated graduate programs are essential for our maturing University so that we may meet our local, national, and international obligations.

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[1] *The Costs of Higher Education in California, 1960–1975: Prepared for the Master Plan Survey Team . . . The Regents of the University of California and the State Board of Education* (Berkeley and Sacramento, 1960), p. 51.

Graduate Programs Several academic departments look forward to the development of a doctoral program.

As this University grows and achieves greater stature, such aspirations are both inevitable and desirable. However, in view of the limited nature of our resources and the multi-faceted obligations and responsibilities of the University, careful decisions have been made by the Committee in recommending (in Part III) such areas of expansion within the context of the objectives selected for the University's development. Continuous evaluation by the Graduate Council, administration, and University Senate is needed to guide the future development of the University's graduate programs.

Research More state support for research activities for both individuals and organized units must be provided, especially in the area of humanities and the social sciences. Extramural funds in support of the natural sciences and some of the social sciences are reaching adequate proportions, but the humanities and non-experimental social sciences are grossly neglected. This situation does not deny the continuing need for adequate state support for the natural sciences, so that the basic requirements for continuing extramural support of research will be assured, but it does point up the great disparity in support of research on a campus-wide basis. Within the foreseeable future only state or private foundation funds will be available to the humanities and most social sciences.

Funds for the direct support of research are not the sole means of developing a more scholarly milieu at the University. Recruitment of research-minded faculty members, acquisition of research materials for the library, and use of federally sponsored research training grants are being carried out at an ever increasing rate. The entire process will be further intensified.

Appropriate methods and funding to provide uninterrupted research time for members of the faculty must be developed. Very little has been accomplished to solve this problem. Private foundation funds will be sought to help the faculty members who need little more than adequate periods of uninterrupted time at reasonable intervals for creative research and special scholarly effort. For others, who require a better distribution of their teaching and research time each day, the solution is more simple. Among other means, extensive curriculum review and pruning will be of direct importance in providing appropriate conditions for maximum academic achievement.

Library Facilities Immediate development of an adequately stocked research library is an imperative necessity for the achievement of strengthened research and graduate study. The Graduate Research Library, presently being planned, is a monumental step forward. Although excellent beginnings have been made in many subject areas, the development of an adequate Graduate Research Library will take considerable time and extensive effort, for the program requires not only increased funds for library acquisitions, but even more importantly, it demands the recruitment of scholarly bibliographers who have the professional contacts, linguistic ability, and a thorough knowledge of the fields involved to acquire needed books, documents, and reports. Well-organized liaison and procedures must be developed and maintained with the East-West Center's Institute for Advanced Projects to avoid duplication of collections and to achieve an effective and mutually beneficial strengthening of library resources.

Recruitment of Faculty and the Staffing Pattern

Recruitment

Because we have recommended that emphasis during the years ahead be placed on improvement in quality of present programs, rather than further broadening the scope of the University's operation, we especially urge the selection of faculty members of outstanding scholarly attainment and promise. No one should underestimate the inherent difficulties of this task. Every major college and university has the identical objective of improving the caliber of its staff. The more prestigious and affluent the institution, the more attractive are its inducements to prospective faculty. Unlike other parts of the state government, the majority of the professional personnel of the University must be recruited on the mainland. The University's special problems because of this situation must therefore be considered as unique in the State.

Academic Environment To compete successfully in the academic marketplace, a realistic understanding of the academic and material expectations of high quality faculty members is essential. Every suitable means at our disposal must be marshalled to meet reasonable demands. The development of a stimulating academic climate, an atmosphere conducive to the liberation of talent and maximum scholarly achievement, is the most effective means to attract superior faculty and to obtain the greatest return for the state's investment.

Among the many academic factors contributing to a mature scholarly environment, perhaps the most significant are (1) an assemblage of intellectually superior students and faculty, (2) an appropriate division of working time between instruction and research, (3) adequate physical facilities and services, (4) an adequate library, (5) opportunities for reasonably frequent contact with academic specialists nationally and internationally, and (6) appropriate means of publication of results of scholarly research.

Salaries and Perquisites The adequacy of salaries and perquisites will be a critical factor in our development, as the competition for superior faculty grows everywhere more acute. Salary levels for Hawaii must therefore relate not only dollar for dollar with salaries at major mainland universities, but they must also be sufficient to defray increased costs peculiar to Hawaii.

Higher costs in Hawaii for home ownership are common knowledge on the mainland and represent a powerful negative influence in the recruitment of faculty. Partial short-term alleviation of the problem can be brought about by having an adequate number of faculty apartments for new arrivals. The only long-term solution is to include the higher housing costs in an appropriate formula for faculty salaries. Increased costs for food over comparable mainland areas must also be integrated in the basic salary scale.

Not until we come to grips realistically with the problem of cost differential, can we expect to compete successfully for faculty in the national market. Once this has been accomplished, we can then compete on the firm basis of our special academic opportunities. These, in the long run, will determine the quality of our institution. Superior faculty members are not likely to be persuaded to join our ranks by material considerations alone. But neither will they respond to academic inducements alone if difficult material sacrifices are entailed.

Relocation Costs Costs of relocation are increasingly being provided by mainland universities. Hawaii's perennial problem in this regard is distinctly greater than that of mainland states. One way to ameliorate this difficulty is to start employment for new faculty members from outside Hawaii on 1 July rather than 1 September, so that on arrival in Hawaii salary checks would be available immediately to defray relocation costs. Those terminating employment would receive compensation through 30 June, rather than 31 August as they now do. The salaried academic year and the fiscal year would then coincide, and no special funds would be required to supplement the regular annual salary to meet relocation expenses.

Recruitment Procedures Candidates for faculty positions at the associate and full professor levels should be carefully screened, including a personal interview, before they are employed. Maximum use should be made of mainland trips for administrative or other professional purposes for interviewing prospective faculty members. One disadvantage of our geographic isolation can be overcome in this way, and the chance of providing tenure to less than highly desirable faculty members will be diminished. Appointments of departmental chairmen or other administrative personnel should not be made prior to an interview in Hawaii. Funds should be allocated within the travel budget for this purpose.

Each department should strive to recruit or retain one or more experienced faculty members who have achieved distinction in their field. Indeed, in those areas and disciplines in which the University of Hawaii should excel, at least one member of the faculty should have achieved eminence. Outstanding younger faculty members and superior students will be attracted to departments in which academic leadership is strong and recognized beyond the borders of the state. The association between potentially outstanding younger scholars and widely recognized experienced scholars will help create an academic milieu in which both students and faculty are motivated to perform at their highest intellectual levels.

Rank and Tenure

The distribution of faculty among the professorial ranks within each department must be critically reviewed in relation to augmentation of staff. Aside from budgetary considerations, important pedagogical considerations are sometimes involved. A pyramidal structure with the fewest faculty at the rank of full professor and the largest number holding the rank of assistant professor is generally the most desirable, although in certain situations this pattern may not be the most suitable.

Rigorous scrutiny of the quality of faculty members who have not attained tenure status must be intensified to prevent stultifying mediocrity. Experience has shown that a major improvement in procedures for deciding whether or not to retain faculty members after the probationary period could be made if full or partial return transportation to the West Coast were provided for faculty members whose contracts are not renewed. Contributing toward mediocrity in our faculty is an understandable reluctance on the part of administrators and faculty committees to terminate appointments of less desirable faculty members, because of the expense incurred in returning to the mainland. It is strongly recommended that the University provide reasonable severance pay.

Departmental Organization

The responsibility for making and protecting a complex college's investment in its faculty is principally that of the departments, where the faculty do most of their work, have most of their professional associations, and are supplied with what they need to carry out the University's programs. Strong departments develop under the leadership of chairmen with imagination, integrity, tact and devotion, who must be given terms of office of sufficient length to allow for implementing long-range plans and must be rewarded for the competence and energy their jobs demand.

Departmental Chairmen Immediate review of existing tenure in the office of departmental chairmen, their period of active duty each year, as well as their remuneration is strongly recommended. Improved methods of selecting departmental chairmen, clearer understanding at all levels of the chairman's role within the college and University, a regular "eleven months" administrative duty period and a stipend commensurate with his service and responsibilities are surely needed.

With strong departmental organization, the college must provide for the coordination of departmental plans, their integration into college and University operations, and their financing. The departmental chairmen, with assistance by the college dean, must make certain that the students and faculty alike are working under optimum conditions during all academic sessions.

Student-Faculty Ratio: Its Educational Significance

The student-faculty ratio (SFR) has been used as a measure of teaching load in institutions of higher learning. If calculated in a uniform manner, it should serve as a basis for comparison of teaching loads between institutions. With certain reservations, it may be used as a basis for projecting future staff requirements as related to anticipated increase in enrollment. The SFR usually is calculated as the number of full-time equivalent (FTE) students divided by the number of full-time equivalent faculty. The ratio has been determined for the University of Hawaii for 1962–63, it has been compared with ratios for certain other institutions and its educational significance is discussed below for the present and the future.

SFR at University of Hawaii For the University of Hawaii, student FTE's are computed on the basis of total credits of enrollment divided by 16, an average full-time student load. This results in an average conversion factor of 85.55 per cent of total, degree-credit, daytime enrollment in the first semester as the FTE student load.[2] This factor is considered to be reasonably accurate, although it lumps together graduates and undergraduates[3] and it does not take into consideration *new* enrollees in the second semester and in the summer session to a large extent these would be compensated by drop-outs. The actual enrollment in 1962–63 was 9,565, giving a base FTE of 8,183 degree-credit students.

For the University of Hawaii, the number of full-time equivalent faculty (total teaching position count) in 1962–63 was determined from the University's 1962–63 Expenditure Plan by summing designated instructional positions (instructor and above), including those in administration and those in the College of Tropical Agriculture designated as research (R) positions but used in instruction. Excluded were instructional (CI) positions in the Pakistan and Thailand contracts, and fractions of a CI position assigned to Research and Extension in the College of Tropical Agriculture. The administrative positions were included as they constitute part of the workload involved in instruction; also, a few administrations still engage in part-time teaching. The teaching assistant (CI-1) positions were excluded, as is done in calculations for most other institutions, because teaching assistants do not assume responsibility for instruction. Calculated on this basis, the FTE faculty consisted of 569.29 positions.

The student-faculty ratio for 1962–63 may thus be calculated at 8,183/569.29, or 14.4 to 1.

On first consideration, the ratio of 14.4 students to one faculty member might be considered to be very low and it is true that in most university surveys, educators are hesitant to present and discuss student-faculty ratios for fear they may be misconstrued. To properly evaluate student-faculty ratios in universities there are several factors which must be considered:

(1) Higher learning, with its great diversity and specialization of course work, requires a corresponding diversity and specialization of faculty. This is particularly true at the graduate level where many specialized courses, each with relatively small enrollment, must be offered for the adequate training and experience of the students.

(2) With the tremendously accelerated rate of increase in knowledge today a faculty member must devote much of his time to reading, research, and other scholarly activities in order to keep abreast of latest developments in his field. The excellence and prestige of the University depends not only on the faculty keeping abreast, but also on making significant contributions to knowledge. A part of the total working time of a member of the faculty is thus assigned to research and scholarly activities. Moreover, the student FTE includes graduate students who require much more individual attention than undergraduates because of the tutorial methods of instruction involved in the most advanced aspects of their academic programs.

(3) The faculty FTE includes several activities which are only indirectly related to instruction. However, if the computation is restricted to instructor-and-above positions in the Graduate School, the Colleges, and the Hilo campus in all (549.67) the SFR is increased only slightly, becoming 14.9 to 1.

Another method of computing the student-faculty ratio is to base the faculty FTE on total credits taught and divided by an assumed full-time teaching load of 12 credit hours per semester, rather than to use the actual position count as was done in computing the SFR of 14.4 to 1. In so doing, the SFR approaches the 20.7 to 1 as reported in the HEW report.[4] In actual fact, the average teaching load is less than 12 credit hours, because of time devoted to research, graduate study, and minor administrative functions, thus accounting for the apparent discrepancy.

It should not be assumed from the foregoing account that the faculty is underworked. Considering his multitude of duties and responsibilities in teaching, grading, counseling, lecture preparation, current reading, directing advanced graduate work, conducting research and other scholarly activities, serving on thesis and faculty committees, and rendering service to the community, the average university professor puts in well over 40 hours per week.

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[2] *University of Hawaii Housing Study.* Harland Bartholomew & Associates, May 1963.

[3] Calculated separately for undergraduates and graduates, the factor becomes 87 and 72 per cent, respectively, for spring enrollment, 1963–the only data now available on IBM punch cards.

[4] *University of Hawaii and Higher Education in Hawaii.* Department of Budget and Review, State of Hawaii (Honolulu, November 1962), p. 110.

SFR at Other Universities

Machlup[5] points out a downward trend in student-faculty ratios in institutions of higher learning in the United States over the past few decades, which he explains as follows:

> . . . the student-faculty ratio changed considerably between 1930 and 1950, when the number of students per faculty member declined from 12.8 to 9.3, but it has not changed much during the 1950's. The lower student-faculty ratio, relative to earlier years, is probably less a result of smaller than of fewer classes per teacher, in accordance with the increasing emphasis on research which has accompanied the growth of graduate education . . . this shift of faculty time to research, which is a pre-condition of graduate work, has probably extended to better colleges, which could not compete with graduate schools for the most qualified professors if they insisted on higher teaching loads.

More study will be needed to permit reliable comparisons of the SFR for the University of Hawaii with those published for specific mainland institutions because of uncertainty as to methods used by other institutions for computing student and faculty FTE's Harris[6] adds the following comments:

> Student-faculty ratios (SFR) depend on all kinds of factors; the kinds of curriculums . . . ; the course requirements for students—at fifteen hours per week the SFR, [all else being equal], will be lower than at nine hours; the teaching load—the greater the higher the SFR; the number and size of classes—the more numerous the courses and the smaller the classes (at given teaching loads), the lower will be the SFR; the greater the use of assistants, undergraduate or graduate, the higher the SFR will be.

In medical schools a ratio of 3 to 1 is not uncommon. On the other hand, law school ratios have risen as high as 40 to 1 and no doubt higher; junior colleges usually have a much higher ratio than 4-year colleges and universities.

With the reservations implied above, the SFR of 14.4 to 1 for the University of Hawaii may be compared with the record of mainland institutions. Several of the larger universities have much lower ratios: at the University of Pennsylvania in the early 1960's the ratio was 10 to 1; at Columbia, Cornell, and Yale it was 9 to 1, 8 to 1, and 6 to 1, respectively. For all state colleges of California the average ratio in 1958–1959 was 13.6 to 1; for the University of California it was 12.2 to 1.[7] At the University of Tennessee in 1955–1956, with an FTE student enrollment comparable with that at the University of Hawaii (8,391) and with similar methods of calculating the FTE's, the ratio was 10 to 1.[8] It appears that the University of Hawaii ratio of 14.4 to 1 is reasonable for a university of its size. Certainly it is not too low in comparison with most others; it may well be high.

Future Trends

Because of anticipated large increases in enrollment and consequent large increases in the cost of higher education, educators have given much thought to the possibilities and consequences of increasing the SFR. The late Beardsley Ruml stated that Dartmouth's enrollment could increase from 2,264 to 3,000 and yet the faculty could be reduced from 203 to 177—a change in ratio from 11 to 1 to 17 to 1. This higher ratio could be achieved by reducing course requirements from 15 to 9 hours per week. Other mainland institutions have adapted less streamlined formulas to their needs, resorting to instructional changes as well as to various managerial strategies, all intended to increase the student-faculty ratio. Thus a report from the State of Pennsylvania envisages a rise from 12.4 to a maximum of 21 to 1 by 1970. The *California Restudy of 1955* projected a 20 to 1 ratio as eventually desirable throughout the state system. On the other hand, the *Master Plan for Higher Education in California 1960–1975*, in projecting faculty requirements and cost, assumes that the SFR will remain at the same level as in 1958, i.e., 19.7 to 1 for junior colleges, 13.6 to 1 for state colleges, and 12.2 to 1 for the University of California.

In view of the uncertainty of how an increased SFR will affect the quality of instruction and how it will affect the problem of recruitment of faculty in the ever-increasing competition between institutions, we believe that the present ratio of 14.4 to 1 for the University of Hawaii should be maintained in making projections of faculty and staff needs. However, the faculty, through department chairmen, deans, and curriculum committees, should be charged with the responsibility of seeking ways to increase the student-faculty ratio, without impairing the efficacy of teaching. There are many areas for study. For example, each department curriculum should be reviewed to investigate the possibility of eliminating courses or consolidating their offerings with other departments or colleges. For smaller classes, alternate-year offerings should be considered. In the future, needless duplication and proliferation of courses should be discouraged. As discussed elsewhere, consideration should be given to the possibilities of further increasing class sizes. Harris states:

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[5] Fritz Machlup, *The Production and Distribution of Knowledge in the United States* (Princeton, 1963), pp. 80-81.

[6] Seymour E. Harris, *Higher Education: Resources and Finance* (New York, 1962), p. 544. Many of the statistics used here come from this source.

[7] *Master Plan for Higher Education in California, 1960-1975.* California State Department of Education (Sacramento, 1960), p. 121.

[8] *Public Higher Education in Tennessee: A Report to the Education Survey Sub-Committee of the Tennessee Legislative Council;* Vol. 11, *Personnel* (1957), p. 215.

> . . . the trend is likely to be toward the large class. Many may doubt that the large class is as effective as the small. Difficulties with testing point in the direction of uncertainty. But a practical issue is that good teachers are limited and the large class is a condition for exploiting them; and another is that, given limited resources, we shall have to have large classes. We shall have to learn how to make them more effective.[*]

The faculty must share in solving the problems of the future. Habit patterns of the past must be examined critically, for they may make for avoidable costs. There is a normal reluctance to deviate from familiar patterns of teaching and to experiment with new methods. There is a normal reluctance to abolish a familiar subject. There is also the urge to replace as soon as possible, almost any teacher who retires, though the need he once filled may no longer exist.

Will the faculty be willing to share in solving the problems of the future? There is evidence at the University of Hawaii that it will. At the undergraduate level many courses are already overcrowded according to old standards and new methods of teaching are being tried—for example, replacing formal science laboratory work with laboratory demonstrations for non-science majors. At the graduate level, the adoption of elective non-thesis masters' programs has permitted the acceptance of more graduate students. The faculty work load has increased but to a smaller extent than that required to handle the same number of students in thesis programs. Standards have not been lowered; the graduates are achieving greater breadth of advanced instruction rather than greater depth of knowledge in a narrow sub-discipline.

Experimentation with new ideas to permit a rise in SFR must continue. It must be accompanied, of course, with unbiased scrutiny of its effect on the educational experience and development of the student. We should strive to maintain our standards of excellence in education, but we should not be blind to the need for change in curriculum and teaching methods to handle more students and thus to provide the opportunity of higher education to all who are qualified, desire it, and are willing to work.

Selection and Retention of Students

The concern with quality in education is on its way to becoming a national obsession. This concern is expressed by many professionals as well as laymen who fear that excellence in education may be swept away in the rising tide of enrollment. Generally, the solutions have argued the necessity to raise admission requirements and standards of performance in classes.

If our basic premise is that the University of Hawaii as a state land-grant institution has the responsibility to provide the citizens of the state with an opportunity to achieve an educational level limited only by each one's capacity and motivation, then we cannot afford the luxury of limiting the number of students to only the most brilliant. By the same token, we equally cannot afford the luxury of accepting all without qualification.

The conflict between college opportunity for all and opportunity for some is part of a larger problem, the problem of quantity and quality. If every high school graduate who wants to go to college is admitted, the quality of education is bound to be diluted. Furthermore, this "open door" policy is an exceedingly expensive way of selecting students, for it means a relatively larger freshmen class, many of who may not be qualified for college classes. It may thus result in needless embarrassment, frustration and waste of time for too many students who could spend the year more profitably in educational programs more directly related to their capabilities and needs.

Admission Standards Admission to the University of Hawaii is based on: (1) performance on the college aptitude tests; (2) quality of high school work; and (3) recommendations and ratings by high school principals, counselors, and teachers. We support the present flexible policy in the application of these criteria for admission, and we believe strongly in the maintenance of current standards of admission. Several studies of the relationship between admissions criteria and academic performance of students show the current admissions policy to be defensible and sound. However, in view of the upgrading of standards of performance in our high schools and the possible development of community colleges, we need further systematic studies of the adequacy of the selection methods as a means of arriving at the most efficient and careful method of screening students for admission to the University.

Academic Advising It is reasonable to assume that a positive relationship exists between the availability of adequate academic advisory services and student retention rates. The increasing needs of society for an educated citizenry have resulted in an expanded, enriched and diversified curriculum in universities. The problem of adjusting to an entirely new environment compounds the entering student's puzzlement and confusion about the educational opportunities available and the standards of achievement demanded.

The University of Hawaii, along with most other universities, has been exceedingly slow about developing an adequate and systematic program of academic advising for lower division students, particularly in the College of Arts and Sciences. To provide equal and full educational opportunities for our students, and to reduce the relatively heavy drop-out rate, the development of an appropriate academic counseling program for lower division undergraduates is essential. Nothing will suffice short of assigning every lower division student to a permanent academic advisor selected for his breadth of knowledge and concern for students and their individual welfare.

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[*] *Loc. cit.*

An adequate system of lower division advisors will be expensive, but the cost will be repaid many times over. Students may be guided to their proper field of concentration earlier in their university career, and those who might have been drop-outs for lack of motivation and direction may be saved for a professional life. No exact norms for the desirable ratio of students to advisors exist, but some authorities recommend a ratio of about 100 students to one FTE faculty advisor. A system of allotting approximately 25 students to a faculty member who has been assigned academic advising as a part-time duty should be developed on an experimental basis, starting with the entering freshman class in 1964.

Development of a University Campus Center

A program of out-of-class student activities supplementing the regular classroom and laboratory experience is an integral and important part of the educational scheme of American universities. The vastly increased student body expected at the University of Hawaii will require expanded opportunities to participate in extracurricular activities.

The need is urgent for the development of a full-fledged campus center for all University personnel—students, faculty, alumni, and guests. Such a center should be developed to enrich the community life of the University, to implement its central purposes. Students and faculty should be brought together in an informal way, not only with each other, but also with "outside" non-University leaders in the arts, sciences, humanities, business, politics, and the professions. The center is a valuable institution in student life for providing those vital educational experiences which cannot be fully realized in the classroom and the laboratory. The cultural and social aspects of such out-of-class experience add a dimension to both individual and group life which can be obtained in no other way.

Book Store Among the several service enterprises of a campus center, a university book store is of prime significance. Appropriate selections of titles would provide the campus community with a wide selection of reading materials of the highest caliber, which give added depth and breadth to the formal educational process. In planning for quality education, the University cannot ignore the development of such extracurricular activities as are contemplated in the development of a campus center as the nucleus of an enriched campus life.

Part III: THE ACADEMIC PROGRAM

COLLEGE OF ARTS AND SCIENCES

Role

The chief role of the College of Arts and Sciences is to provide instruction and carry on research in the humanities, the social sciences, and the natural sciences. The College gives instruction not only to its own undergraduate and graduate students, but also to those of other colleges of the University. Its faculty thus performs a fourfold function in the structure of the University as a whole.

(1) It meets the needs of all students for basic or general higher education. Courses are directed toward the development of interests, attitudes, and ideals characteristic of cultivated people capable of thinking clearly and acting upon conviction.

(2) It provides a broad education spread over the undergraduate program, for the large number of students of all colleges whose best preparation requires a combination of academic breadth with a concentration in one area.

(3) It provides a similar program of co-professional or supporting education intended to equip the student for the graduate professional schools.

(4) It provides advanced study and research in the various branches leading to scholarly specialization at the level of the master's or doctor's degree.

Because of the effect of rapid technological change in many occupations, undergraduates must, in increasing measure, turn to the liberal arts and sciences for grounding in fundamental knowledge and theory. The liberal arts and sciences may correctly be described as the heart of the University's curricular structure. They are more than mere sources of instruction or cultivation for individuals. As areas for study, teaching, and research they transcend the separate boundaries of particular departments and even the special dominions of this or that college. Since the liberal arts and sciences originate and support the learned professions, a university that allows them to fall below the maximum standard which the society can attain will end up as a stagnant institution or a technical college of a type that no longer meets society's complex needs.

Its geographical position midway between continental America and the Far East makes Hawaii more than ordinarily conscious of the Orient. Therefore, more than usual attention is given to the history, languages, philosophies, literature, drama, art, music, and institutions and customs of the countries of Asia, along with some areas of the Pacific Basin. In the humanities and performing arts important advances are being made in library resources and in other facilities of the University which encourage scholarly excellence and imaginative creativity.

In addition, the College has played an instrumental role in the University's development of certain scientific programs which take special advantage of Hawaii's subtropical Pacific location and its multi-racial composition. The College offers distinctive advantages for both undergraduate and graduate work in marine biology, geophysics, sociology, and technical and cultural interchange among students, scholars, and technicians from Asia, the Pacific, and America.

College Organization

The broad program of the College consists of the three primary areas of central importance to all branches of a university.

The Humanities: the fine arts (including the performing arts) history, languages, literature, philosophy, religion.

The Social Sciences: anthropology, economics, geography, political science, psychology, sociology.

The Natural Sciences: including the formal science of mathematics, and consisting of the various branches of the physical and life sciences.

Organizationally, the College is divided into 25 departments, mostly along lines of subject matter specialization common to American universities. Additionally, several departments and programs in the College cut across traditional lines, including Asian Studies, interdisciplinary courses in the natural sciences and (projected) in the social sciences. The degree of Bachelor of Arts is offered in 32 fields; the Bachelor of Science in three (Chemistry, Geology, and Meteorology). Curriculums leading to the Bachelor of Fine Arts and the Bachelor of Music degrees give intensive instruction in these fields.

Trends in Enrollment

The University of Hawaii is a relatively young institution, having passed its first half-century mark in 1957. The College of Arts and Sciences was first organized in 1920, when the original "College of Agriculture and Mechanic Arts of the Territory of Hawaii" became a chartered university. The purpose of the legislature, according to the new policy defined at that time for higher education in Hawaii, was "to lay the foundation for a larger range of collegiate work in Hawaii by establishing a university . . . sufficiently inclusive to provide for all future needs."

The intensive development of the College of Arts and Sciences since the end of World War II is only faintly reflected in the published enrollment figures, which rose from 800 in 1939 to 3,006 for September 1961. Far more illuminating than these totals is the overriding factor that a very large percentage of the students registered in Arts and Sciences courses are enrolled in other colleges. During the fall semester 1961, for example, enrollment in courses offered by the College of Arts and Sciences totaled 75 per cent of the total student credit hours for the entire University. One can very confidently expect that the future rate of growth of the College will surpass by a wide margin the record of the past.

Program Development

No large-scale innovations in the form of many new departments are projected for the College of Arts and Sciences. Nevertheless changes in the present mature program will be made to keep pace with fresh problems, and new developments and improvements in teaching and research will be in order.

For example, as specialization becomes more imperative, it is obvious that countermeasures must be maintained to make certain that different specialists—even those working in the same general area—will be able to converse with one another with good understanding. No neat answer to the problem of the fragmentation of modern knowledge has appeared, other than the broad formula worked out by leading universities, where successful attempts have been made to combine a vigorous system of general education, interdisciplinary programs and seminars, and an open perspective which stresses the cooperative nature of knowledge.

Areas for Special Emphasis

At the University of Hawaii certain subject areas are ripe for consolidation. To achieve efficiency in the face of enrollment pressures, but also to improve opportunities in both teaching and research, plans are now being developed to consolidate programs in subject areas in which recent progress requires close collaboration. Thus certain of the earth sciences might be strengthened by reorganizing them in a single department of the geophysical sciences. The case for encouraging interdisciplinary awareness even between fields as distinct as the social sciences and the humanities has been recently stated by John S. Gillin of the University of Pittsburgh, who urges that whatever gaps exist between the social sciences and the humanities "should be bridged by the faculty, and the students should be led constantly back and forth across the bridge":

> We have tended to forget that truth does not consist of bits and pieces, shreds and patches, but on the contrary is a complex, and interrelated whole. As we once more become aware that truth discovered through one line of study inevitably relates to truth reached by other approaches, we shall again find ourselves united and in communication with each other, despite differences in data and techniques of handling them. The social sciences and the humanities are all interested in man, his products, and his problems.[1]

The need in some fields for consolidation of more or less inter-related programs is different from the need to introduce into the collegiate structure work in new fields of concentration. The clearest example of the second situation at the University of Hawaii is perhaps the field of modern mathematical science in which remarkable recent advances have taken place in bridging mathematics and other substantive disciplines. These developments are seen, for example, in psychometrics—the application of mathematical methods to psychological problems; sociometrics—the quantitative wing of sociology; econometrics—the use of mathematical sciences in the analysis of economic phenomena. Professor S. S. Wilks of Princeton University concludes a recent study with the statement:

> Let me say that mathematical methods which began spreading into the social sciences on a significant scale a quarter of a century ago are now becoming a major factor in new and fruitful attacks on a whole variety of difficult problems, especially economics, psychology, and sociology. The trend is inevitable, and its health will depend heavily upon the number of researchers highly qualified in both social science, substantive knowledge, and in mathematical knowledge.[2]

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[1] John S. Gillin, "Human Behavior and the Social Sciences," in *Both Human and Humane: The Humanities and Social Sciences in Graduate Education*, ed. Charles E. Boewe and Roy F. Nichols (Philadelphia, 1960), p. 37.

[2] Ibid., p. 78.

Such advances in mathematical science apply not only to the social sciences but to certain of the life sciences as well, notably genetics. Professor Wilks adds: "Whether a single program of basic courses can be developed to meet the mathematical needs of students in all these categories remains to be seen. I have some doubts that this can be accomplished in the reasonably near future, and hence believe that it may be necessary to have two parallel programs." At the University of Hawaii it would be desirable to maintain a dual program in mathematics, reserving the new branches for a department of mathematical analysis and statistical methods.

Necessary improvements in instructional programs sometimes require new types of physical facilities and services. Such changes are bound to affect policies in staffing. For example, the College should greatly strengthen its support of the language laboratories demanded for up-to-date efficient techniques in the teaching of foreign languages, a major field of concentration in the University. To solve this problem successfully will require new budgeting procedures. Instead of individual departments budgeting their laboratory requirements separately, the laboratory facilities should be drawn into some form of independent but interdepartmental unit operating with its own budget.

Without doubt the College's program as here roughly outlined has made notable advances during the past fifteen years. But the rate of past progress is a wholly inadequate measure for meeting the ever-increasing demands the College will face over the next ten years. An imperative need will be to strengthen the caliber of the faculty and to give full support to research activities, a problem studied in another section of this report. Since we cannot discuss in detail each of the fields of instruction, it is best at this point to keep in sight a few basic principles.

The first is that Hawaii, like the nation as a whole, is passing through a period of crisis in education. A recent study by eminent educators has called attention to our overriding need for a common understanding of our problems and a better insight into the values we stand for, beyond our narrower private goals.

> The heart of the matter is that we are moving with headlong speed into a new phase of man's long struggle to control his environment, a phase beside which the industrial revolution may appear a modest alteration of human affairs. Nuclear energy, exploration of outer space, revolutionary studies of brain functioning, important new work on the living cell—all point to changes in our lives so startling as to test to the utmost our adaptive capacities, our stability, our wisdom.[*]

We cannot afford, in short, to have our "most highly educated people living in intellectual isolation from one another, without even an elementary understanding of each other's intellectual concerns." We have need for high-caliber scientists, mathematicians, and engineers. We must also see to it that these shall be broadly educated. But we must also do all we can to make certain that every educated person is literate in science. Such authorities as David Riesman of Harvard, Theodore Hesburgh, President of Notre Dame, and James R. Killian, Jr., former President of Massachusetts Institute of Technology, are agreed that it is essential to our integrity as a society to prevent forms of intellectual fragmentation which lead to a loss of social purpose.

> This bears also upon the balance in education between the sciences, the social sciences, and the humanities. Each has a valued part to play and any policy that fails to nourish and strengthen all is shortsighted indeed.

The arduous and long-range goal of the College of Arts and Sciences is simply to create in Hawaii, to augment and to pass on to each next generation, something of that heritage, expressed in their intellectual vitality, which has characterized the historic universities of the Western world.

Summary of Chief Recommendations

1. Consolidation or reorganization of programs in subject areas where recent progress requires close collaboration. First attention may be given to the earth sciences. Studies should be undertaken of other fields, particularly those involving the social sciences and the humanities.

2. Development of certain new fields of concentration by combining the traditional course work of separate disciplines, e.g., intimately relating statistics and numerical analysis to work in biology, psychology, sociology, and economics.

3. Development of new physical facilities and administrative reorganization of existing facilities to match enlargement or alteration of academic programs. The administration and budgeting of the language laboratories need immediate study.

4. Development, in cooperation with the rest of the university of a program for strengthening faculty and supporting research activities.

5. Continuing experimentation with new methods and techniques of instruction, including larger classes, small honors sections, independent study, comprehensive examinations, and technological aids.

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[*] The quotation is from the report of Panel V, John W. Gardner, Chairman, President of the Carnegie Foundation for the Advancement of Teaching, in *Prospect for America: The Rockefeller Reports* (New York, 1961).

COLLEGE OF TROPICAL AGRICULTURE

Role

Among industries in America, agriculture perhaps has felt the greatest impact of the technological revolution presently in process. Only a few generations back the feeding and clothing of Americans required about 90 per cent of them to be engaged in production agriculture; today, a bare 15 per cent accomplish the same objectives notwithstanding the fact that the quantity of products required is greater by several orders of magnitude.

Urbanization of Hawaii's population, with its coincident decline in farm-related personnel, has paralleled similar socio-economic shifts on the mainland. Thus, the instructional role of the College of Tropical Agriculture necessarily has undergone extensive alteration from its earlier emphasis on training almost wholly for production agriculture and improved standards of living for rural households to a more technologically oriented curriculum designed to supply personnel for research in improvement of crop production, distribution, marketing, and use, and to provide instruction and demonstration to translate findings of researchers into useful applications for the field, factory, community, and home.

Colleges of agriculture normally embrace complex and varied programs in land-grant institutions everywhere, but Hawaii's situation is somewhat unique in that its two principal agricultural industries, sugar and pineapple, support extensive experimental stations of their own, and depend but incidentally on state or federally financed professional assistance. Extensive mechanization of the sugar and pineapple industries has reduced the work force necessary in rural areas and has been a major contributing factor to the extreme urbanization characteristic of the State. Paradoxically, and contrary to mainland trends toward consolidation of small farms and thus decreasing the work force as a result of mechanization, a combination of Hawaii's unusual terrain and the conversion of formerly relatively idle lands into small plots for intensive farming has actually increased the number of farm owners or managers. This simultaneously with the rapid decline in the plantation-related work force. Thus the College's role is one of increasing responsibilty to the state, for economic strength through diversified agriculture and expanded service-type activities in the rising tourist industry (e.g., restaurant management, textiles) are fundamental to our economic stability and progress.

Having an important impact on the changing role of the College is the ever-increasing demand for training in technical agriculture and home economics by students from countries of Asia and the Pacific Basin. Many of Hawaii's plant and animal crops are also important to these countries, but more useful to them is the training available in the sciences fundamental to agriculture everywhere (e.g., soil science, animal and plant breeding, physiology, nutrition, agricultural economics, etc.). Coupled with an increasing number of regular foreign students in attendance are the East-West Center grantees. Center officials estimate that 20 per cent of all grantees (anticipated total about 2,300) will be enrolled in agricultural curriculums.

The College's three interrelated but essentially discrete, activities (instruction, research, and extension service) are treated separately in this Plan for convenience in presentation. The present section relates primarily to the instructional program; the Hawaii Agricultural Experiment Station is discussed beginning on page 56, and the Cooperative Extension Service is reviewed starting with page 80.

Present Status

Instruction within the College is offered in three curriculums in agriculture and one in home economics, each of which leads to the Bachelor of Science degree. Within these four curriculums are 14 options or special fields in which students may major. As in other professional colleges, curriculums in agriculture require substantial course work in other colleges, especially the College of Arts and Sciences.

Undergraduate enrollment in agriculture has held rather constant at about 100 since 1957. Country-wide trends are similar, illustrating the emphasis in recent years away from curriculums in production agriculture toward advanced instruction in agricultural subjects based on a solid foundation in basic natural and social sciences. Home economics, a subject matter area undergoing profound changes at present to cope with the universal trend toward urbanization, and the vastly increased need in Hawaii for highly trained skills in tourist-related industries (textiles and food) as well as for community development leaders, has experienced a rapid rise in enrollment (100 in 1959; 227 in 1963). Graduate enrollment in most agricultural subjects has been spiraling upward during the past few years; indeed, the rise has been far too rapid for the facilities available.

Administrative Organization

Administration of the College's total program is highly complex because of the necessary integration of its three traditional branches characteristic of land-grant universities. Further complicating the situation is the gradual widening of the gap between agricultural activities *per se* and home economics.

The present arrangement with a single assistant dean responsible, among other things, for all resident instruction, including home economics, seems unsuitable. More appropriate, perhaps would be two assistant or associate deans, one to assist the dean with instruction, research, and extension in agriculture, the other to have similar responsibilities for home economics. Such an arrangement would enable the activities in the field of home economics, now quite divergent from their traditional rural focus, to be reviewed in the central administration of the College by someone dedicated to the work in this field, as has been true for the agricultural aspects of the College's instructional program.

Recent splitting of the former Department of Agriculture into several departments within the College has resulted in what appears to be an unfortunate dilution of faculty strength and has resulted in some unnecessary duplication and fragmenting of courses. Immediate attention should be given to the matter of consolidating several existing departments to try and achieve a more effective development of all three basic activities of the College.

Program Development

The present technological revolution has shown for agriculture, as it has for other applied sciences, that training in specific technologies is soon outmoded, and new techniques must be developed and applied. Hence, the emphasis of higher education in agriculture and home economics must shift even more than it has at present towards the basic natural and social sciences on which new techniques must be based, and more, too, towards a sound background in the humanities to provide better appreciation of human values and perspectives in the years ahead.

The primary responsibility of the College will continue to be the maintenance of a curriculum which will provide young people of this state with the requisite flexibility in formal training for adapting to the agriculturally-related vocations of the future. Its program must also enable its graduates to contribute to the manpower needs of the nation and to requirements for trained personnel in the Pacific Basin and Asian countries. It should also function in the training of future foreign agricultural educators so that the developing countries can become self-sufficient in relating science and economics to future agricultural applications.

Future emphasis on curriculums was forecast by a recent study on the occupational status of students who have received bachelor's degrees in agriculture during the fifteen years since the organization of the College.[1] Many are now teachers in Hawaii's public schools, and many others have positions in other state and federal governmental agencies. Of the more recent graduates, marked changes in even these occupational patterns are evident. Of those who completed undergraduate degree programs within the last five years relatively few are in production agriculture or in public school teaching, and a significant trend toward graduate education and careers in research is evident. Clearly, recent graduates realize that the best opportunities for future professional employment will require post-graduate education.

Within the broad purview of home economics, increasing numbers of trained personnel are finding excellent professional opportunities in various aspects of the food and clothing industries. Restaurant management, designing, textile chemistry, and fashion coordination are important occupations in support of the steadily increasing tourist industry. Teaching and extension work in foods and clothing continue to absorb a number of graduates, as they have in the past.

Assuming that the enrollment in undergraduate agricultural curriculums holds steady at about the current figure, and that the upward trend in enrollment in home economics continues, a total of about 440 undergraduates is expected by 1975, of whom approximately three-fourths will enroll in home economics. No additional programs in agriculture are contemplated at the undergraduate level, and present course offerings should be reviewed with the object of reducing them to an essential core of specialized curriculums related specifically to the resource areas of the College. As specialized demands in the textile and food service industries increase, as they seem certain to do, it is expected that changes will be made in the home economics curriculums to satisfy them.

Without question the greatest impact upon the College in the immediate future will be in graduate instruction. In the Fall of 1962, 141 graduate students enrolled in agricultural subjects. Should the East-West Center continue to develop as planned, a very sharp increase in enrollment of grantees in agricultural subjects is assured with a maximum of 400 grantees anticipated by the Fall of 1968. Regular graduate students will continue to increase in numbers but at a more gradual rate. These students are expected to increase to 175 by 1968 and to 265 by 1974, making a total of 575 graduate students by 1968 and 665 graduate students by 1974.

No new curriculums leading to advanced degrees are contemplated in the agricultural fields, but a strong possibility exists that an increase in demand for post-graduate education in home economics will result in the development of a master's degree program in this field. A thorough study of graduate curriculums in agriculture should be made, paralleling the recommended study for possible consolidation of departments, for it is likely that considerable reinforcement of present graduate curriculums could be achieved thereby.

Two-Year Agricultural Technology Program

In the field of agriculture, as in the fields of engineering and nursing, special opportunities appear to exist for personnel trained for periods less than the regular four-year baccalaureate program. Both production agriculture and agricultural technology would benefit from specially designed two-year programs which might be eminently suitable as part of the offering of a community college.

Facilities

Because of the comparatively few undergraduate students enrolled in agricultural curriculums over the years, only a minimum of instructional facilities were developed. The great influx of graduate students in agriculture during the past three years has completely overwhelmed existing teaching laboratories and related facilities. Emergency measures to solve this space problem are required immediately, even if the solution is but temporary, and a high order of priority must be given to appropriate graduate instructional facilities in the University's capital improvements program.

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[1] Shosuke Goto, *Occupational Status of University of Hawaii Agricultural Graduates 1948-62* (March 1963).

Coincident with the classroom, office and laboratory space which will be needed to handle increased enrollment and instructional faculty, plans must be developed to integrate physically all three interrelated activities of the College (instruction, research, and extension). Administratively, the College is organized to assure functional integration of these three responsibilities, but the present physical separation of personnel is an effective deterrent against accomplishing this objective.

As expected, many of the facilities for implementing the College's program have had to give way to accommodate new physical plant developments necessary to serve the increasing enrollment of the University. Greenhouses, garden plots, animal quarters, etc., have been steadily diminishing in size or are gone altogether from the Manoa campus. Other wooden, temporary buildings which have housed much of the College's post-war programs have given way to permanent buildings serving other uses.

Although many on-campus research facilities can be displaced to branch farms throughout the state, most instructional facilities must be located on or very near the campus. Preliminary planning is already well along toward the development of a major facility for all plant sciences on the campus, and in a general way, consideration of structures to house the animal sciences and entomology.

Summary of Areas for Special Emphasis

Curriculum development at the undergraduate level in agricultural subjects must continue to stress a sound background in the arts and sciences to prepare students for specialized graduate studies related to the improvement of all aspects of agriculture from production to consumption, especially in the area of diversified agriculture. In home economics greater cognizance must be taken of the textile and food industries related to tourism. Graduate level work in agriculture will develop very rapidly not only because of the trend toward applying high level scientific, engineering, and economic competence to agricultural problems, but also because about 20 per cent of all East-West Center grantees will be assigned to the College for instruction. The widening gap between agriculture and the present day concept of home economics brings with it problems of equitable administration within the College, the solutions to which seem best approached by providing closer contact with the central College administration through the appointment of an associate or assistant dean for home economics.

Special opportunities seem apparent for graduates from a two-year technical curriculum in agriculture, both for production agriculture and for agricultural technology. Such a program is not advocated for the Manoa campus because of the press of other programs for available faculty and facilities, but *the program might be considered in planning for community colleges.*

Agricultural facilities on the Manoa campus for instruction, research, or extension are wholly inadequate. Immediate attention to the problem is necessary, because of the expected crush of graduate students in each succeeding year, and because space formerly utilized by agricultural activities must rapidly give way to new permanent structures for other University programs.

COLLEGE OF BUSINESS ADMINISTRATION

Role

The role of the College of Business Administration is to provide an understanding of the objectives, functions and management of American business enterprise. It educates students for careers in business organizations, gives advanced training to mature managers and executives, and provides advisory services and research to business and other organizations. The College serves not only the interests of Hawaii, but in an increasing degree will provide a broader service to students and executives in the whole Pacific area, in cooperation with the East-West Center.

Present Status

A four-year program leading to the degree of Bachelor of Business Administration and a graduate program culminating in the degree Master of Business Administration are offered. The College has a student enrollment (September 1963) of 1,228 undergraduate and 32 graduate students. A steady increase in enrollment has been noted since the creation of the College in 1950 (485 students).

Advanced training and advisory services are provided by the Industrial Relations Center (see p. 79) the Real Estate Center, the Advanced Management Program, and the Small Business Management Program, all administrated by the College. Research and consultation are undertaken by individual faculty members. Additional research activities by members of the College faculty are contemplated through the proposed combined Economic and Business Research Center. The Center is expected to provide facilities for inter-disciplinary research, involving faculty of this and other colleges.

The College is now organized into eight instructional departments, which offer 13 undergraduate majors, as follows:

Department	*Major*
Accounting	Accounting
Business Analysis and Statistics	Business Research
Business Economics	Business Economics
Finance, Insurance, Law, Real Estate	Banking and Finance Insurance Real Estate
Hotel Management and Tourism	Hotel Management and Tourism
Management	Management
Marketing and Foreign Trade	Advertising Foreign Trade Marketing Retail Merchandising
Personnel and Industrial Relations	Personnel and Industrial Relations

Over the past ten years, the average percentage distribution of graduating seniors, by majors, is:

Major	*Percentage*
General Business	16
Banking and Finance	10
Personnel and Industrial Relations	19
Accounting	37
Merchandising	12
Office Management	6
	100

During the first two years of all undergraduate curriculums, the students follow a common program of courses comprised mostly of the humanities, physical and social sciences. These are intended to provide a broad and liberalizing educational foundation before the student undertakes his professional education in the third and fourth years.

Program Development

During the fall of 1963, faculty committees have re-examined the program of the College, leading to a plan for future development. These committees have made preliminary reports dealing with the curriculum, accreditation, adult education, and new physical facilities. The focus of their work is the further strengthening of the College as a professional school of business.

The curriculum committee has made recommendations to eliminate certain courses and to reduce the number of departments. This revision of the curriculum will ease instructional difficulties, notably the number of course preparations, and enable faculty members to give more time to graduate instruction, research, and other professional improvement. An improved curriculum and rational teaching load will also help the College in recruiting and retaining better qualified faculty members. As enrollment increases—not fewer than 2,000 students are estimated for 1973—the challenge of maintaining an excellent faculty and fully utilizing it through effective curriculum planning is paramount.

The building committee has projected space requirements for an urgently needed new building. The adult education committee has examined the emerging needs in this area. The accreditation committee has indicated what the College must do to qualify for accreditation by the American Association of College Schools of Business.

Acting on the reports of the accreditation and curriculum committees, action has been taken to assure that the College meets three of the four major standards of the Association during the spring semester, 1964. These are to the effect that:

(1) More than 50 per cent of junior-senior level courses are taught by faculty members holding the appropriate terminal degrees.

(2) No faculty member makes more than three different course preparations.

(3) No faculty member teaches more than 12 credit hours per week, including any night teaching in the College of General Studies.

Although the fourth major standard—that of adequate classroom, laboratory and office space—cannot be met with the facilities available in Hawaii Hall, planning for a new building is well underway.

The College anticipates considerable expansion of its graduate program. It is expected that the revised MBA program instituted this year will attract more qualified students with undergradute business training as well as students with liberal arts, scientific, and engineering backgrounds.

In this connection, consideration will be given to the establishment of graduate assistantships and graduate research grants similar to those offered in many mainland state universities, which will encourage bright, competent young men and women to do their graduate research at the University of Hawaii.

Although the College does not, now, have any proposals before the Graduate Council for the doctorate in any of its departments, the possibility of such doctoral programs will be studied as facilities and staff develop in existing programs and in newly projected areas designed to strengthen the role of the College in Hawaii and the Pacific region.

While it is too early to comment on the specific recommendations of the committee on adult education, several preliminary observations may be made:

1. The well-established Advanced Management Program for higher level management should be continued and enlarged to reach an even broader group of management executives in Hawaii, the mainland, and in the Pacific-Asian countries.

2. A new program to meet the needs of middle management personnel should be seriously considered.

3. The Small Business Management Program should be further developed to provide additional programs to serve the other parts of the State (Kauai, Maui, Hawaii, Lanai).

The above programs will cover the needs of higher-level management, middle management, and small business management. In addition, through a cooperative effort with the various East-West Center conference and training programs, the business and management expertness of the College should be made available to a broader segment of business management within the Pacific-Asian perimeter. These activities, combined with especially arranged seminars and programs on specific topics of value to the Hawaiian business community, will enhance and strengthen the contribution of the College in the field of adult education.

Although the work of the Industrial Relations Center has been incorporated elsewhere under the service functions of the University, it should be emphasized here that the College is vitally interested in the possibilities of broadening the scope of its programs, and work in this direction has already been undertaken. Note should also be made of the intention of the College to develop an outstanding department of hotel management and tourism to meet the demonstrated and emerging needs in Hawaii and the Pacific.

As suggested above, a major, long-run objective of the College of Business Administration is to become a significant center of business education serving the Pacific area, operating in close collaboration with the East-West Center. Under investigation are the possibility of a program of study and business internships for younger faculty members of Pacific area business schools, and additional special courses, seminars and programs for practicing executives, oriented around specific functional or regional areas of interest.

It is also the desire of the College of Business to support the various programs of the East-West Center, contributing special skills and competence to assist its international training programs, in scholarship and research, as well as in skills for conference work in areas which would be helpful to the economic well being of Hawaii and the Pacific-Asian countries.

In conclusion, this report should be considered as preliminary; the committees of the College are in the process of developing further detailed proposals. As these proposals are defined, accepted, and executed they will be incorporated in subsequent issues of this Plan.

COLLEGE OF EDUCATION

Role

The College of Education is committed to the basic functions of providing a program of teacher education for the preparation of new teachers, for the professional education of specialists and educational leaders, and for conducting various types of educational research.

The basic teacher education programs for the preparation of classroom teachers for elementary and secondary schools are undergraduate programs to which are added a semester of internship and a semester of graduate academic study. The College also provides programs for graduates from the arts and sciences to meet teacher certification requirements.

In this era of rapid social change and increasing training demands, the graduate program of the College has become an important and integral part of its basic function of teacher preparation. In addition to affording those already in service an opportunity to keep abreast and to improve themselves professionally, graduate degree programs are designed for experienced teachers who wish to prepare themselves for specialized service in public education, e.g., school administration, guidance and counseling, research, communication aids, and teaching the atypical child (gifted, mentally retarded, etc.). Other programs serve graduates whose interests lie in the psychological, philosophical, and historical foundations of teaching and learning

To fulfill its complete role in teacher education, the College is concerned with the conduct of basic educational research. With the national ferment requiring reassessment of methods and substance of public education, the College believes that it can best fulfill its responsibility for teacher education through leadership in experimental education and in new educational media. Significant problems centering on the effect of teaching technique, audio-visual aids, organization of materials and class size on the learning process are among the vital concerns for research in the College.

Present Status

Currently, the College of Education consists of five instructional departments, the Laboratory Schools (University Preschool, University Elementary School, and University High School), the Educational Research Bureau, the Teacher Placement Bureau, the Ford Educational Improvement Project, and the Overseas Contract Programs. Undergraduate enrollment has more than doubled from 722 students in 1950 to 1,972 in 1963.

The departments of Elementary Education and Secondary Education have major responsibility for the pre-service teacher education programs. Their functions include the counseling of upper division students, providing course instruction, assigning of student teachers, providing coordinating supervision of student teachers and interns, particularly those placed in public schools. Additionally, the two departments provide programs of graduate study.

The Department of Educational Psychology is chiefly responsible for teaching the psychological foundations of the teaching-learning process and methods of evaluation of teaching. Equally important are the graduate programs in guidance and counseling, special education, research methodology, and psychological theory. Within this department is also the Reading Clinic, an agency for the diagnosis and correction of reading difficulties. This clinic is also a training unit for the preparation of specialized teachers of reading in the public schools. The educational communications program, including both instruction and service in the areas of television, graphics, and the more common audio-visual aids, is presently a part of the Department of Educational Psychology.

The Department of History and Philosophy of Education offers a program of teaching and advising of freshmen and sophomore students. It also offers graduate instruction in the history and philosophy of education and in comparative education.

The Department of Administration and Supervision is exclusively a graduate department. It has the responsibility of providing programs for the training of administrative leaders in public education. Both pre-service and in-service teachers are so served.

The Department of Health and Physical Education provides physical activity courses for all students in the University, and trains students for positions of leadership in recreation.

Educational Research Bureau Established by legislative action in 1963, the Educational Research Bureau is presently assembling a staff. The primary purpose of the Bureau is to conduct basic research into fundamental problems of education, especially problems of immediate interest to the schools of Hawaii, such as the teaching and learning processes, child development and guidance, and experimental tests of curriculum innovations. A secondary purpose of the Bureau will be to conduct research into various applied areas such as administration and personnel, school plant management and school surveys.

Staffing of the Bureau will follow a pattern of split appointments with teaching departments. Thus, the Bureau will serve also as a resource for thesis research undertaken by graduate students in the College. Proposals for specific research projects are in preparation, and applications for supporting funds will be made to state, federal, and private sources.

Laboratory Schools Traditionally, the Laboratory Schools have served the purpose of providing experience for student teachers. Because of the growth in enrollment in the College, it has become necessary to place an ever-increasing number of student teachers in the public schools as well. Public school experience for the student teachers, coupled with the cooperative efforts of the State Department of Education in support of this program, has resulted in a College policy eventually to discontinue use of the Laboratory Schools for student training purposes, and to convert them to other important uses. Currently, only relatively few of the student teachers are placed in the Laboratory Schools. Although the campus schools have often served for purposes of demonstration, and their facilities have, in a rather limited way, been used for research purposes, a greater intensity of such use is being developed.

The College has been heavily involved in the improvement of public school administration at the principal and vice-principal level. The Leadership Training Program, conducted by the Department of Administration and Supervision in collaboration with the State Department of Education, has contributed substantially toward the upgrading of administrative performance of district officials, has trained new personnel for these positions and continues to render a continuing counseling service to those already trained. In addition, the College's training program has improved the guidance and counseling services in the public schools. The level of training requirements now meets those of the better programs on the mainland.

Little, albeit significant, progress has been made in developing a program of audio-visual aids to teaching and learning. Experiments are underway to develop the resources of television, films, graphics and audio tapes for the improvement of efficiency in learning, for handling larger numbers of students and for expanding the resources of the teacher.

Although the local teacher shortage largely has been met, there still exist scattered shortages in special categories, and there is in general a critical shortage of well-qualified teachers throughout the United States. Over the past few years a number of district personnel directors from the mainland have made personal visits to Hawaii to interview and recruit graduates of the College, indicating that teachers produced by the College are of high quality. Personnel directors from the Armed Services, likewise, seek graduates from the College to staff dependents' schools in many parts of the world. During the past year, the College Placement Office placed approximately 200 graduates outside Hawaii.

Ford Foundation Program A seven-year grant from the Ford Foundation has made possible the "Educational Improvement Project in Hawaii." Under the terms of this grant, a five-fold demonstration-research project is well underway. These projects are: (1) criteria for the selective admission of students; (2) an experimental curriculum in teacher education; (3) team teaching in the elementary school; (4) secondary school science; and (5) secondary school mathematics. The latter two projects are concerned with curriculum modification, and have already shown promise of demonstrating the superiority of some of the reorganized curriculum materials in science and mathematics. Likewise, aspects of the team teaching demonstration point to modifications in the elementary teacher education program, such as the introduction of minor fields of specialization.

Program Development

Teacher Education That part of the Ford Project which deals with the basic curriculum (the first three years) in the College appears to indicate some marked changes are desirable in what is now termed the "regular" or "standard program." There is a strong possibility of establishing a pre-teaching curriculum (similar to pre-legal, etc.) in the arts and sciences preparatory to entering the professional phases of the College's curriculum. Within the next two years, after additional results of the Ford Project are analyzed, a final decision will be made as regards the level at which students will enter the College. A change in the College's program of this magnitude will require extensive review as it implies many curricular and staffing alterations.

The present separation of educational theory and practice into semester blocks during the fourth year of the College curriculum will be replaced by a program of concurrent assignments to course work and student teaching either during the fourth or fifth year. As indicated above the student teacher program will be carried out in the public schools rather than in the campus schools.

Function of the Laboratory Schools

The phasing out of student teaching (with limited exceptions) from the campus schools will be completed within the next two or three years. As of September 1963, student teaching had already been eliminated from the Elementary School. During the current year, the Elementary School has been opened to pre-service and in-service teachers as a demonstration school, and is being used for experiments on reorganized curriculum materials in arithmetic and reading. By September 1964, student teaching will have been removed from the three-year-old and four-year-old classroom groups of the Preschool, and a reduction of the number of student teachers assigned to the High School will likewise have been accomplished.

The primary role of the campus schools in the future will be that of research, experimentation, and demonstration. The three-and four-year-old pupil classroom will become an interdisciplinary laboratory for child study. Participating disciplines will include psychology, health, sociology, etc. The campus schools in their entirety will become a research laboratory especially for studies requiring continuing contact with the students year after year. The schools will have the responsibility of experimenting with and conducting tests of the effectiveness of curriculum innovations, of experimenting with mass-media applications (including television) and of developing themselves into laboratories for research in learning, personality structure and a wide variety of basic and applied questions with which child and adolescent education is concerned. Additionally, the Laboratory Schools will be used as a limited laboratory for the training of student teacher supervisors. Within this new operational scheme for use of these schools, a sound educational program will be maintained for the young students.

The new concept of subprofessional teacher aides will also be tested in the campus schools. With ever-increasing financial pressure to increase the pupil-teacher ratio, the efficacy of using lower-salaried teacher aides to support the professional teacher must be analyzed. At present no information is available to indicate to what extent the efficiency and productivity of a teacher may be augmented by a teacher aide or what training requirements would be necessary for their preparation.

Graduate Studies

State certification of teaching credentials will continue to require a fifth year or post-graduate year which, for superior students, can also culminate in a Master of Education degree. Scheduled for on-campus review and subsequent coordination with the State Department of Education is a program of graduate education wherein a student may fulfill requirements for a master's degree in a subject matter field outside the College and concurrently complete a minimum of courses in educational theory and practice to qualify for state certification. Greater flexibility within the College toward this goal has occurred over the past few years, but the program is far from optimal, resulting in the loss to the state's schools of many highly qualified potential teachers.

The Master of Education programs will continue to be offered in the five teaching departments, since advanced educational training is necessary to develop higher quality leadership in public education, as well as to meet the increasing need for a greater number of more highly specialized teachers.

Within the period covered by this Plan graduate training of such quality that would lead to the doctorate may well be achieved in certain areas. On the basis of present needs and staff capability, the College has already proposed a plan now under review and final appraisal to offer a doctoral program in public school administration. Sufficient strengths in staff and supporting facilities to offer doctoral programs in educational psychology and history and philosophy of education are virtually certain to be developed. Should the Educational Research Bureau develop as anticipated, competence in research and on-going research programs will make doctoral programs feasible.

Research

Correlated with the development of graduate programs within the College, a rapid expansion of research in education is expected to materialize. The utilization of the campus schools to develop an educational research center for Hawaii and the Pacific area is a logical outcome of our geographic position and our educational history. In conjunction with the University's interest in Asia as well as the College's overseas contract programs, the Educational Research Bureau could become an important center for comparative education.

Should the search for a director of national reputation in the research field of learning be successful, the Educational Research Bureau will perform the functions of conducting basic research in education and of assisting the research efforts of the faculty in education, giving direction to the research efforts based on the campus schools, and of accepting primary responsibility for the projected child study laboratory. The Bureau will also enter into cooperative relations with the State Department of Education in an effort to find answers to the many practical and operational questions which confront a public school system.

Summary of Areas for Special Emphasis

Experience of the recent past, coupled with early results from the selective admission of students to the College under the Ford Project and the changing curriculum in teacher education, seems to indicate that the College will move toward increased emphasis on the admission of upper division and graduate students and recommend a "pre-teaching" curriculum prior to eventual admission to the College. Campus Laboratory Schools will no longer serve only as student teacher training schools—this training being mostly shifted to the public schools—but will be used primarily for educational experimentation and demonstration in close association with the Educational Research Bureau and with the cooperation of the Department of Education.

Changes involving the concentration of teacher education on upper division and graduate level students, combined with greatly changed objectives of the campus schools—from teacher training to research and demonstration—require substantial changes in the background and capability of the faculty. Through replacements and additions the College will assemble a faculty capable of functioning at the graduate level. Even greater changes will have to occur in the qualifications of the teachers in the campus schools. The present teaching-supervising character of staff members will be altered as staffing changes permit by employing persons having a teaching-research emphasis and training. The graduate teaching assistant program, so essential to this projected program, will have to be expanded.

The campus schools will require reorganization and physical improvement to achieve the objectives of their anticipated new role. On a ten acre plot, presently occupied by four frame buildings, a complex of buildings should be constructed to house a child study laboratory, a training and research facility for mentally retarded children, facilities for a music and art program, recreational facilities and classrooms for the junior high school grades.

COLLEGE OF ENGINEERING

Role

Professional education in engineering was one of the functions of the College of Hawaii when it was first opened in 1908. When the college was transformed into a university in 1920, the function of engineering education was placed in the College of Applied Science. The present College of Engineering was established in 1959.

Until 1953, the instructional program was limited to that of providing a Bachelor of Science in civil engineering. However, it soon became apparent that engineering graduates of the University of Hawaii are by no means restricted to the local market for their employment and, since 1953, in response to national needs, additional curriculums have been added in general engineering, electrical engineering, and mechanical engineering. Additionally, because of the ever-increasing need for advanced training, graduate programs have been added, leading to Master of Science degrees in civil engineering and electrical engineering and with them the necessary coordinated opportunities for engineering research.

Graduates of the College of Engineering are fully able to undertake professional engineering work anywhere. Indeed, the need for engineers has been so great on the mainland that considerably larger numbers of Island students have been able to step into professional careers than could possibly have been absorbed in the local economy.

Present Status

At present the College of Engineering has an enrollment (September 1963) of 774 undergraduates and 22 graduates. Part of Keller Hall, five small buildings and a quonset hut constitute its physical facilities.

The undergraduate enrollment in engineering at the University of Hawaii showed, between the end of World War II and 1961, a precipitous increase interrupted only during the Korean War. This increase continued four years after a decline in undergraduate engineering enrollment began in the nation as a whole, although since 1961 a slight decline has likewise been evident in Hawaii. The rate and persistence of the growth of enrollment in Hawaii may be attributed to the addition of the new undergraduate programs in general, electrical, and mechanical engineering to the original program of civil engineering. All freshmen in the College are now enrolled in a common program of general engineering and do not designate a branch for specialization until the sophomore year.

The character of undergraduate engineering in the nation and Hawaii has changed greatly in the last decade, as programs have been deepened and upgraded. Engineering education has become more open-ended, more concentrated on fundamental science, so that the engineer will have the foundation and versatility to adapt himself to new technology, some of which may not even have been known when he was an undergraduate. However, while there has developed a steady trend toward more engineering science, authorities generally agree that it would be a serious mistake to try to recreate the engineer in the image of a scientist. The most challenging problem facing engineering schools in the immediate future will be how to couple theory with practice, purpose with action, and develop an appreciation of the experimental techniques and empirical judgments that so often determine successful design.

What is very certain is that increasingly complex engineering problems require for their solution more and more advanced engineering education. Nationally there has been a sharp increase in engineering enrollment at the graduate level, and all indications are that the University of Hawaii graduate engineering programs, started with master's level programs in civil and electrical engineering, are sharing in this growth. The development of the graduate programs is important not only in itself but for the strength it gives, through the quality of faculty attracted, to the undergraduate programs.

Development of graduate studies depends critically on the development of a research program. The Engineering Experiment Station was authorized in 1961 to encourage and administer faculty research. Since then a broad program of research has been initiated, as discussed on page 58.

Program Development

Engineering Technicians In planning for the development of the College of Engineering, cognizance must be taken of an increasing gap between vocational education and professional education in engineering, a gap that technical institutes in the nation are beginning to close, though inadequately. In Hawaii, where there is no provision for training engineering technicians, the need is acute. Because of the difficulties of satisfactorily combining technical and professional training in the same institution, however, it is assumed in planning for the development of the College that technical training will be provided elsewhere, perhaps in community colleges should they be established.

Undergraduate Programs The present undergraduate curriculums in civil, electrical, and mechanical engineering at the University are expected to maintain essentially their present scope, although there must be some curriculum adjustments to allow accredition of the mechanical engineering program which will be sought in 1965-66. To place engineers in the growing national market for chemical engineers, as well as to train them for work in possible future industries in Hawaii, a new undergraduate program in chemical engineering should be started in 1967. At present, however, there is not great demand for chemical engineers. The overall enrollment in engineering in the College is expected to increase for the next decade, on the average, at the rate predicted nationally. Some of this rise in enrollment would be expected after the addition of a chemical engineering program, but the program would be aimed partly, at least, to equip its graduates for finding employment outside Hawaii.

Graduate Programs The graduate enrollments in civil and electrical engineering may each be expected to increase at rates of about eight additional students per year. A master's level option should be offered in hydraulics to support developments in coastal engineering and water resources, in cooperation with the Hawaii Institute of Geophysics. Work in environmental and sanitary engineering should be strengthened in cooperation with the Department of Public Health. Additional work in foundation engineering should be provided to strengthen the structural engineering program. Advanced electronics studies must be strengthened as rapidly as possible in the electrical engineering program so that its graduates may enter and promote the growing electronics industry in Hawaii. Doctoral programs in civil and electrical engineering should be offered beginning about 1967-68. At that time both faculty and research facilities should be adequate.

Graduate programs in mechanical and chemical engineering should also be initiated, one leading to an M.S. in mechanical engineering about 1967-68 and developing into a Ph.D. program about 1972, and one leading to an M.S. in chemical engineering about 1972.

Facilities

The program developments described, together with the anticipated growth in enrollment in engineering, will require construction of a new engineering building about 1967. The small buildings and the quonset hut in the engineering quadrangle now used as instructional laboratories, while serviceable, are among the oldest and least efficient on the campus. They occupy the center of the campus where land area is becoming critical and must be put to use in greater density. These buildings should be replaced entirely as the need for additional laboratory space becomes acute. Since Keller Hall was designed for general classroom use and has no features especially adapted to engineering, it should be used as a general classroom-office building. A new engineering building should be planned so that all programs and faculty are housed as a homogeneous unit. Approximately 75,000 square feet of space will be required to provide adequate facilities for the College.

COLLEGE OF NURSING

Role

The College of Nursing has as its responsibility the education and clinical training of students in dental hygiene, medical technology, and nursing. The College was established in 1959 with a Department of Nursing, formerly a school in the College of Applied Science. In 1960 two additional departments were added, medical technology, formerly in the College of Applied Science, and dental hygiene, formerly in the College of Education.

Dental Hygiene

The present 2-year program in dental hygiene is directed toward qualifying dental hygienists for positions with dentists and the State Department of Health, and for admission to state certification and licensing examinations. The program had an enrollment of 25 in September 1963. In future years, enrollment in dental hygiene is expected to increase at a rate about proportional to that for the University as a whole, i.e. about double over the next decade.

Accreditation of the program has recently been granted by the Council on Dental Education of the American Dental Association, and improvements in the program recommended by the accreditation team will soon be implemented. Should the University undertake programs leading to a 2-year terminal associate degree, serious consideration should be given to including dental hygiene among them.

The wooden dispensary building which now houses the Department is scheduled for early demolition. Space must be provided in another location for a clinic, lecture and laboratory rooms and offices. Modern dental equipment for training students in new procedures being used in dental offices is urgently needed.

Medical Technology

This program is concerned with training students for service as technicians in hospitals and clinics. The curriculum includes three years of course work on campus and a senior year (12 months) of internship in various hospitals, leading to the bachelor's degree.

During the past two years the curriculum has been strengthened to include a broader exposure to the social sciences and humanities, a more intensive course in human anatomy and physiology, and a new course in orientation to medical technology. A start has been made at providing adequate supervision of the internship program, but further progress is needed to strengthen University supervision of the clinical training, to effect a rotating internship whereby the student will be exposed to a greater variety of specialized techniques and to inaugurate a lecture-demonstration-seminar program to enable the student to integrate knowledge obtained during the first three years of course work with that obtained during his clinical experience.

Total student enrollment has increased from 20 in 1959-60 to 101 in September 1963. Enrollment is expected to reach at least 200 in 1975, more if the University, through the East-West Center, undertakes to train medical technologists for island communities of the Pacific Basin and in the southeast Asian countries where acute shortages of trained personnel exist. Should training of medical technicians for the Pacific and Asian countries prove to be an important part of the program, certain curricular changes will certainly be required.

The anticipated increase in enrollment will bring concomitant problems from lack of placement opportunities in hospitals during the internship year. A partial solution is the utilization of hospitals in outlying sections of Oahu and those of the neighbor islands, yet such geographically widespread internships will create increasing problems of adequate supervision by University faculty.

The 12-month internship has created special problems since the inception of the program in medical technology. It telescopes unreasonably the total academic program on campus into three years, it removes students from the campus over such a lengthy period that the integration of theoretical and applied aspects of their work suffers and the remuneration provided by the hospitals is totally inadequate. Thorough review and revamping of the program is urgently needed. National certification requirements must be met, but a more appropriate educational and internship experience is within the realm of possibility.

Over the next ten years, the cost of the program may be expected to at least double its present level because of the need for additional staff for teaching and internship supervision, and additional operating expenses, particularly if outlying hospitals are utilized for clinical training.

Nursing

The present 4-year program in nursing, leading to the bachelor's degree, trains professional nurses for positions of responsibility in hospitals, clinic, and public health agencies. The enrollment has increased from 8 students in 1940 to 214 students in September 1963.

The 1961 Legislature directed the Legislative Reference Bureau to ascertain (1) the demand for nurses through 1970, (2) whether existing facilities for nursing education are adequate to meet the demand, and (3) to ascertain ways of helping nurses to seek further education. The study[1] found that while no acute shortage of nurses existed in 1961, at least for Oahu, by 1970 there would be need for 1,678 more professional nurses: 1,000 in general duty, 133 in office nursing, 100 as head nurses, 107 in public health, 125 in private duty, 185 in administration and supervision, and 28 in nursing education. The role of the University in helping to meet this need is described in the following four programs.

It should be emphasized that only local needs have been considered in the plans. As in the medical technology program, further expansion will be needed if the University is to assume the obligation of training nurses for the island communities of the Pacific Basin and the southeast Asia countries where the need is great.

Associate Degree Program

Other states have demonstrated that nurses for general duty can be adequately prepared in 2-year terminal programs if such programs are administered by institutions of higher learning. Seventy-nine associate degree programs exist in 24 states. The granting of associate degrees gives important status to such programs and enables them to meet requirements of accreditation. A program of this type should serve to attract more students toward nursing as a career.

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[1] *Nursing and Nursing Education in Hawaii*, Report No. 3, 1962, Legislative Reference Bureau, University of Hawaii (Honolulu).

The two state nursing associations and one of the two hospital schools in Hawaii have requested the College to explore the possibility of developing a 2-year terminal program. This has been done, and a proposal for implementation of the program has been submitted to the University administration.

The proposed 2-year program would prepare graduates to take state examinations for licensure as registered nurses. The curriculum would consist of a foundation in natural science, social science, and communication, preceding or concurrent with clinical instruction. A typical program would include four semesters and two summer sessions, about half of which would be in nursing theory and practice, and half in the humanities, social and natural sciences. All aspects of the program, including the nursing practice in hospitals and other agencies, would be entirely under the control of the University. The program would require less time for completion than the 3-year diploma program now offered by the hospital schools, yet it would provide a broader educational background. It would differ markedly in course content and emphasis from the first two years of regular 4-year baccalaureate program.

The associate degree program has been planned to phase in over a 3-year period commencing in the spring of 1964, the initial enrollment to be in the fall of that year. With an estimated annual enrollment of 40 freshmen, it should produce about 30 graduates per year in 1965-66 and thereafter. The cost would increase from about $12,000 in 1963-64 to about $65,000 in 1965-66 and subsequent years. The program should produce a total of 150 nurses for general duty by 1970. The two hospital schools have graduated an average of 75 nurses per year over the past five years, although they have facilities to accommodate more. At the present rate, they could produce some 500 general duty nurses by 1970. Together, the programs would fail to meet the estimated need of 1,000 general duty nurses in 1970 by some 350. This gap can be filled by recruitment from the mainland if Hawaii continues to attract nurses, or by local recruitment if we are able to encourage more high school graduates and mature women returning to employment to enter the nursing program so that not only the University but also the hospital training facilities are utilized to capacity.

Bachelor's Degree Program

This program is designed to provide a 4-year curriculum to prepare nurses to serve in supervisory, public health and other specialist positions carrying responsibilities beyond those of the general duty nurse. The Legislative Reference Bureau report states that there will be a need for 678 nurses in a specialized or administrative capacity, most of whom should have the training represented by the bachelor's degree, at least.

The present program averaged 24 graduates per year over the 5-year period prior to 1962-63; in that year it produced 29 graduates. The increase in freshman enrollment from 51 in September 1962 to 57 in September 1963 points to an output of at least 60 graduates per year by 1970. This total number will fall far short of the state's requirements, but the anticipated total enrollment of about 300 students is the maximum that can be handled with presently available clinical facilities needed for student practice learning. Costs will rise from about $142,000 in 1963-64 to about $205,000 in 1970, chiefly because of the need to increase the faculty by about seven members to maintain a student-faculty ratio of 9 to 1 in clinical courses. This staff increase is essential if patients are to receive adequate nursing care during student learning. Operating expenses will increase in somewhat greater proportion to enrollment because of the need to utilize widely-spread and more distant outlying facilities for hospital and clinical training.

Master's Degree Program

This program provides advanced training beyond the baccalaureate level to prepare graduates for more highly specialized positions, such as administrators, clinical specialists, consultants, teachers, and research workers. The Legislative Reference Bureau report anticipates the need for about 200 more nurses in this category by 1971.

A grant from the National Institute of Mental Health, effective from 1963 to 1968, provides a faculty position which makes it possible to offer a master's program in psychiatric-mental health nursing. Three additional faculty members will be needed before programs can be offered in the three remaining fields of nursing: public health, maternal-child, and medicine-surgery.

State support will be needed to strengthen the graduate program, commencing in 1964-65. To produce about 16 nurses per year at the master's level in a graduate program including all four specialties would cost about $31,000 per year, chiefly for three additional faculty members. The program would be expected to contribute about 75 graduates to the 200 needed by 1970. Future federal grants-in-aid for graduate level training will doubtless depend on the adequacy of the state contribution.

Continuing Education Program

A program of six short-term courses, to be conducted over a 2-year period, was begun in September 1962, for 43 registered nurses in leadership positions. This program, together with a workshop, is financed by federal funds; participation is limited to nurses in administration, teaching, and supervision. Federal aid is not available for general duty or staff nurses who also need to update their skills. The possibility of refresher courses in the College of General Studies should be investigated.

COLLEGE OF GENERAL STUDIES

Role

The central function of the College of General Studies is to extend the services of the University to people whose educational needs cannot be satisfied within the time schedules and curricula of the degree-granting colleges of the University. A second function is to make available to the people of the State opportunities for continuing education at a collegiate level. A third responsibility of the College is to make the cultural activities of the University available in population centers throughout the State—for example, through its lyceum series on the neighbor islands.

Programs

The broad program of the College includes the following instructional offerings and activities: (1) campus credit courses; (2) campus non-credit courses; (3) credit courses at military bases; (4) weekend courses on neighbor islands; (5) informal activities; (6) conferences and institutes. These programs serve at least half as many people as are enrolled in all the remainder of the University. Approximately 80 per cent of the College's annual budget has been from tuition income. Some or all programs are in continuous session throughout any given year. Predicted growth of enrollment is broadly summarized below, where each instructional program and service is reviewed and its potentialities are assessed. In addition to the established programs, two prospective programs are briefly described; the first, a proposed baccalaureate degree program; and, second, an agency to encourage and help to coordinate community development in Hawaii.

The Credit Program

The credit program underwent a rapid development during the decade of the 1950's. Campus and military-center credit programs now offer nearly all the requirements for the first two years of any degree curriculum and an increasing number of selected advanced courses, including mathematics, sociology, business, psychology, history, political science, and engineering. Courses on the neighbor islands, on television, at the Kwajalein Center, and at other special locations serve small groups with individual needs—for example, the weekend neighbor-island courses for teachers.

Under present policies the number of students is expected to increase as rapidly and at about the same rate as the day undergraduate student body. This means that enrollment could conceivably be expected to double in about ten years. Recent improvements in procedures for handling unclassified students within other colleges will result in a decline of enrollment in several of the unclassified categories. Nevertheless, the normal and inevitable growth in enrollment and services will create problems in housing, curriculum development and staffing.

Crowded conditions not only on the Manoa campus but also in classrooms on military bases will severely hamper future operations. There will be a particular need for the establishment of permanent centers at new locations, perhaps as adjuncts to the proposed community colleges. However, greater use meanwhile should be made of alternative facilities then available—public schools, for example—especially when such other non-military facilities can be found bordering military centers.

As the College does not offer a complete degree curriculum, there is need to make a systematic analytic study of courses which would pay their way and which would contribute in greater measure to the educational program of degree-seeking students. There is reason to believe that such an analysis would reveal that selective development of a somewhat fuller curriculum is feasible in several branches of the basic arts and sciences as well as in certain curriculums in the professional colleges.

Lack of academic advisers in the evening prevents the College from providing its students with services fully equal to those available to day students. Certainly the anticipated expansion of credit programs, especially in advanced courses, will require a strengthened service in academic guidance to students during the evening schedule.

Non-Credit Program

The purpose of non-credit courses is to make portions of the University's store of knowledge and the professional talents of the regular faculty and selected members of the community more widely available. For nearly 15 years, from 300 to 800 people have enrolled in each of the four annual sessions of non-credit courses on the campus. Most courses are at the introductory undergraduate level, some are college preparatory, but a growing number are post-graduate courses for professional people. The program is self-supporting. The student body consists primarily of adults with specific vocational interests. Except for writing and studio art courses, cultural courses have been poorly attended; about 75 per cent of the program consists of stable offerings repeated regularly.

No accelerated expansion or added emphasis on the program is expected on the Manoa campus. Although the College will continue to offer cultural courses, it is believed that the program of informal activities described below will serve such interests more effectively. On the other hand, further expansion of off-campus non-credit courses will develop as demand becomes apparent. For example, there is an evident need for strengthening the non-credit program of Kwajalein, and it is likely that other communities will demonstrate a need for this service. Both credit and non-credit courses should be made easily available, especially where these areas included in the University's "outreach" are already supplied with highly qualified and well-motivated teaching personnel.

Informal Activities

The College of General Studies is at present expanding its offerings in the form of single programs of a cultural, civic, and technical character. These activities are conducted throughout the State in public halls, at organization meetings, and over radio and television. The College's offerings have included a successful lyceum series on the neighbor islands and sponsorship of several rented television programs.

On the Manoa campus, a variety of departments, clubs and other groups regularly present plays, film series, lectures, recitals, and other cultural offerings. Except for the calendar maintained by the Office of Information, the University makes no effort to coordinate the needs of these activities. Their development and promotion as a valuable University function has over the years been uneven and somewhat haphazard.

The College of General Studies should be authorized to unify informal educational activities by providing a continuing service for finding speakers and suggesting lecture programs for interested groups. Speakers and programs from the University should be brought to other locations in Hawaii, particularly to the neighbor islands. The College should also be enabled to schedule such programs where feasible on radio and television stations. With such coordinated activity, better records of the University's leadership in this service could be preserved, more University people may be called upon and the quality of the offerings could be improved. There is reason to believe that the numerous persons already engaged in informal activities will find it ultimately more convenient and rewarding to channel their efforts through a single office. What these people themselves require is better service on the part of the University, suitable publicity, audio-visual and other services and financial support for travel expenses covering trips to neighbor islands. A more systematized and energetic program along these lines would be appropriate for this stage in the expanding cultural life of Hawaii.

Conferences and Institutes

In response to a number of requests from both within and without the University, a Conference Center was established as part of the College in 1961. The Center works at University-wide, community-wide, and state-wide levels. The Center offered 28 conferences and institutes between April 1962 and April 1963. The fields most commonly represented were business, social services, and education. Costs for conferences are usually recovered by grant or contract, gift or direct tuition payment by participants.

The stream of requests, 1962-63, for such services indicated that these activities can be expected to grow from the present 12–15 conferences per year to 10 to 15 times that number within ten years, if personnel needs, including clerical assistance, can be met. No help would be drawn from the general fund. However, the projections here outlined would require a suitable physical facility for instruction, feeding, and in many instances housing the participants.

Prospective New Programs

A number of mainland universities have established new baccalaureate degree programs for adults, giving academic recognition to previous training and experience, without sacrificing necessary instructional standards and methods. There is reason to believe that the establishment of a new degree program would contribute to the University's overall achievement by enabling it to adapt its programs and facilities to a wider range of academic goals. The successful mainland programs demonstrate that adults are different from youths as college students, and that frequently their activities—related to career, home, community, and cultural life—constitute evidence of pre-college development of responsibility, judgment, social relations, understanding of human beings, and cultural insight and knowledge.

The College offers no such degree program at present. However, a proposed program tentatively entitled a Bachelor of General Studies Degree Program was approved by an *ad hoc* committee appointed in 1962. The major problems in its implementation center upon: (1) building strong faculty and community support for the program; (2) framing a flexible policy allowing for changes in the program as the experiment proceeds; (3) financing the program.

A second prospective program could be described as a "Community Development Service." In many states, universities maintain a small permanent staff which engages in a double operation: first, organizing community groups to study their needs and to plan and carry out development projects; second, serving as liaison between these organizations and university specialists and other experts who can provide advice on research and development activities. The service does not participate, it must be emphasized, in decision-making.

At present the College conducts no such service. However, as life in Hawaii becomes increasingly complex and urbanized, new techniques and agencies must be developed to provide expert assistance to community groups which wish to explore and solve their mounting problems. Historically, the Cooperative Extension Service has been the University's chief agency for educational activities adapted to agricultural communities and to the life of the home. Important sociological changes in Hawaii indicate that there will be a rising need to assist both rural and Honolulu districts to engage in self-help projects having an economic, political, health, or social aspect. The University should make a systematic attempt to keep pace with this significant trend, and the College of General Studies, together with the Cooperative Extension Service, would seem to be the logical agencies to pool their resources and assist the University in coordinating its services in this direction.

Major Conclusions and Recommendations

1. The College is hampered by shortages in staffing, especially in its academic counseling services. Normal growth of the College will require an expanded and well-qualified staff to provide academic guidance for evening degree-seeking students comparable to the services provided for daytime students.
2. Policies for the recruitment of the teaching staff need careful development and definition. Continuing education and extension services increasingly are becoming a central institutional objective of the University, not merely a marginal activity. Therefore, it would be desirable to make regular provision for instructional services instead of continuing to staff the College's teaching programs by increasing the normal workload of daytime faculty.
3. The credit-program should be developed as found feasible to provide a greater representation of courses at the upper-division level.
4. The College should determine and spell out its most urgent needs for new quarters and expanded physical facilities. The problem is complex. At present there is a need for facilities to replace those used at the military centers. Quarters and other services for informal activities also need planning.
5. The College should develop a continuing centralized service for bringing speakers and educational programs to the University campus and to communities throughout the state.
6. The College should be enabled to develop an adequate staff and necessary facilities for maintaining a Center for Conferences and Institutes.
7. Continued study should be given to the proposed baccalaureate degree in General Studies.
8. The Cooperative Extension Service of the College of Tropical Agriculture and the College of General Studies should collaborate closely and coordinate their extension efforts in such a way as to provide a unified approach to problems of community development in Hawaii (See also p. 80).

SUMMER SESSION

Role

The Summer Session seeks to give students the opportunity to accelerate progress toward degrees or certificates; to provide opportunities for continued guided research at the graduate level; to give school teachers and others the opportunity to take courses in the summer; to bring outstanding scholars and experts to Hawaii to teach their specialties; to pioneer in the offering of new courses and institutes to give special courses to meet particular needs; to contribute to the intellectual and cultural life of the community with public lectures, symposia, concerts, recitals, exhibitions, etc.; and to maximize year-around utilization of University facilities.

Present Levels of Operation and Future Prospects

The total Summer Session enrollment in 1963 was 9,348, as compared with 6,976 in 1959 (and 236 in 1927). The percentage of out-of-state students was 25 in 1959 and 28 in 1963, indicating that increased enrollment during the five-year period was of the same order of magnitude for both Hawaii and out-of-state students. The 2,116 mainland students in 1963 represented all states except Vermont, and the 352 foreign students came from 48 countries and island areas. Approximately one-half of the students in the 1963 Summer Session were candidates for degrees and diplomas at the University. Keeping pace with the growing student body in the summer period has been the curriculum and the faculty. In 1959 the students registered for a total of 27,922 credits and in 1963 for a total of 36,713 credits. During the 1963 Summer Session, not a single classroom was unoccupied during the mid-morning hours, and more classes than ever before were taught in the afternoon.

In general, summer enrollments in major American universities tend to be no higher than 40 per cent of the total regular enrollment. For example, in 1963, the University of Texas had a summer enrollment of approximately 9,000 students, as compared with their regular enrollment of 22,000; the University of Wisconsin had a summer enrollment of about 9,000, with a regular enrollment of about 12,000. The University of Colorado had a summer enrollment of 7,800, with a regular enrollment of about 12,000. The University of Hawaii summer enrollment is outstanding, therefore, in its size, and a continued growth of enrollment and curricular offerings can be expected in the years ahead. It is anticipated that by the summer of 1968 the enrollment in Summer Session may reach a total of some 15,000 students, presuming that the University's classroom and laboratory facilities continue to increase.

The Summer Session has operated since its inception in 1927 with minimal financial support from the University's general fund. If it should be asked to offer a large number of courses with small enrollments, the income from student fees would be inadequate to meet the instructional payroll and other expenses. In such an eventuality, funds for some salaries and other costs would have to be provided from general state appropriations. If the need for an expanded curriculum of a more advanced and specialized nature can be demonstrated to promote the educational programs of our students, general fund appropriations would be as justified for Summer Session instruction as for programs during the regular academic year.

HILO CAMPUS

Role

The Hilo campus offers instruction in courses comprising the first two years of most academic programs of the University, with the exception of nursing and certain specialized curriculums in agriculture and engineering. Since its inception in 1955, the Hilo campus has functioned within decidedly hazy educational objectives. The study of community colleges just completed has for the first time outlined a clear and reasonable role for this campus in the years immediately ahead. However, certain aspects of the program will be less affected than others by probable subsequent modifications of the objectives of the Hilo campus, and it is to these aspects the present planning report addresses itself.

Present Status and Program Development

The Hilo campus is administered by a Director responsible to the University's Vice-President for Academic Affairs. The Director is a member of the University's Council of Deans which meets at bi-weekly intervals. The faculty and curriculums are campus-wide in scope; there is no departmentalization.

Enrollment climbed steadily to 390 in 1962-63, but suffered a 11 per cent decline in September 1963. Most students follow curriculums in the arts and sciences and in education. Should the population of the island of Hawaii remain on its present upward trend, and should the campus remain relatively unchanged in educational scope, an enrollment of approximately 900 is anticipated in 1975

Until the fall semester, 1963, a policy of curricular and faculty uniformity with the Manoa campus was imposed on the Hilo campus. Innovations appropriate for a campus of its size were thus largely constrained. Recognizing that the circumstances of its setting—limited resources and opportunities—are vastly different from those of Honolulu, more effective means of campus development were sought.

A policy of decentralization of academic programs was approved by the University's administration in 1963. By such action the Hilo campus was given a significantly increased amount of authority in formulating curriculums. With active participation of the faculty, real creativity and imagination can be used to develop a curriculum suitable for a small campus. Courses no longer need to be identical with those on the Manoa campus; indeed, experimentation with interdisciplinary courses and new teaching methods is both possible and hoped for.

Inevitably, diversity will create administrative problems. With similar courses and course numbers, the transfer of students to the Manoa campus has been essentially mechanical. With courses organized differently than those on the Manoa campus, the successful mastery of essential subject matter will be tested only at the Manoa campus or at other universities by performance in advanced courses. The lack of course uniformity is not serious. If students are not well taught, mere uniformity between campuses will not guarantee them a successful completion of their undergraduate education—at Manoa or elsewhere.

Concern should therefore center on the quality of learning. If the faculty at Hilo make full use of its opportunities to teach in a small campus setting, with a far greater intimacy between faculty and students than will ever again be possible in Manoa, if it takes advantage of the greater flexibility in instruction offered on a campus where traditional departmental divisions do not inhibit interdisciplinary teaching, it may possibly achieve a level of excellence which will attract students from around the State and from the mainland. Already a few from neighbor islands, mainland schools and Pacific islands schools have come, presumably in search of the educational advantages of a small school.

A policy decision by the Legislature on the fundamental question of whether the Hilo campus should become a part of a system of community colleges or develop along more independent lines will have to be made in the near future. However, certain improvements on the Hilo campus can be effected without awaiting this legislative decision. Communication between the faculty of the Hilo campus and their colleagues in Manoa can and should be increased. Hilo faculty members can enjoy a great deal of interdisciplinary stimulation from each other, but, since there are only one or a few specialists in any particular subject area on the campus, they must largely look to Honolulu for discourse in depth in any academic discipline. In some areas, adequate facilities do not exist in Hilo for research, and it may be more efficient to bring the researcher to better facilities in Honolulu from time to time than to duplicate such expensive facilities in Hilo.

It should stimulate professional advancement of the Hilo faculty if they were to meet more frequently with their opposite numbers on the Manoa campus. Such meetings can take place either in Honolulu—e.g., at a departmental meeting discussing some problems of professional interest, at a faculty research seminar, at a briefing session with a visitor eminent in the field—or in Hilo. Greater use might well be made of guest lecturers from Manoa. Finally, a regular system of teaching exchange should be fostered between the Manoa and Hilo campuses. Incentives to professional improvement, together with a greater awareness of the relation between our common educational aims combined with distinctive institutional roles, should be some of the benefits of such exchange of personnel. The exchange teacher from the Manoa campus would have an opportunity to study the special opportunities and new concepts offered by the curriculum of a small center where the relation of teacher to student is bound to be more personal than is possible on the crowded Manoa campus. Additionally, some Manoa campus departments should plan with the Hilo campus for temporary assignments on the island of Hawaii of faculty members who could teach part-time while conducting research advantageously undertaken there. Geophysics, agriculture, and economics are examples that readily come to mind.

All these mechanisms for educational exchange require little more than adequate interisland travel funds. This an expense imposed by our geography; therefore it is a "built-in" cost and should be met as such.

SCHOOL OF BASIC MEDICAL SCIENCES

Role and Organization

The School of Basic Medical Sciences, the feasibility of which is being studied with the help of a grant from the Commonwealth Foundation, is not part of a plan to establish a conventional "medical school." Rather, it is conceived as an interdisciplinary curricular program framed within the academic and administrative structure of the University of Hawaii. It is designed to equip some students for further clinical training elsewhere toward an M.D. degree (or other professional degree; e.g., D.D.S. and D.V.M.), and others for advanced research degrees (Ph.D.) or technical careers in the biomedical sciences. In some respects, such a curriculum would be simply an expansion of the existing premedical program to include subjects conventionally taught during the first two years of a traditional medical school, thus enabling students from the University of Hawaii to spend two post-baccalaureate years here before entering medical schools elsewhere with advanced standing. "Because of the early attrition of students and the ability of clinical facilities to accommodate greater numbers of students than can basic science facilities, existing four-year medical schools can accept 300 to 400 more students for the last two medical school years than are presently enrolled."[*] The foregoing quotation implies that Hawaii's students may find greater acceptance to medical schools at the third-year level than they experience now when applying for entrance as first-year students.

The value of such a program to the University and to the State of Hawaii can be manifold.

(1) It would enable Hawaii to contribute in greater measure than at present towards the education of physicians needed by the State, and would encourage local students to enter the field who might not otherwise be financially able or intellectually motivated to do so.

(2) It would contribute to the national and international pool of biomedical scientists, teachers, and technicians. Since the State of Hawaii benefits from the services of these professions it is appropriate that the state university should engage in their training.

(3) It would promote research and training in the biomedical sciences at the University. This, in turn, should serve to attract outstanding scientists and teachers, as well as extramural funds for facilities, personnel, and advanced training.

(4) It would stimulate the growth of the biological sciences generally at the University and would focus national and international interest in Hawaii as the biomedical center of the Pacific Basin, thus contributing toward a major objective of the University.

The introduction of a teaching program in the basic medical sciences of the University would not require the *de novo* acquisition of the entire staff and facilities needed for such a program. Much already exists and needs but minimal supplementation to accommodate the proposed biomedical science studies. The entire premedical curriculum has been in operation for many years and can be incorporated, initially without changing course structures, into the School of Basic Medical Sciences. Qualified teachers in the fields of biochemistry, microbiology, human genetics, and physiology, are now on the University staff and provide a nucleus for education in these disciplines.

A most essential, and expensive, aspect of staffing in the biomedical sciences would be the provision of research facilities, without which it would be impossible to attract high quality scientist-teachers. The Pacific Biomedical Research Center is presently under development and will offer research facilities and space for the faculty of the school. The P.B.R.C., funded largely from extramural sources, will exist with or without an educational program, but will be more attractive to scholars and more contributory to the University's educational objectives if associated with student training.

Academic Program

The master's program under consideration in the basic biomedical sciences has been designed to incorporate a maximum amount of flexibility, while at the same time retaining from more traditional programs all of the features considered essential as preparation for the third and fourth years of medical school. This should be accomplished by using demonstrated mastery of subject matter, rather than completion of courses, as the criterion for advancement of students. General comprehensive examinations, as suggested below, would be taken in customary subject areas whenever the student was prepared. A baccalaureate degree would be conferred when the student has passed the examinations in Group I, and a master's degree when those in Group II had been passed.

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[*] American Medical Association and American Association of Medical Colleges, *Functions and Structure of a Modern School of Basic Medical Sciences* (1958).

The flexibility of the proposal is intended to serve two important goals. First, it would free the individual student from a rigidly prescribed program of study which would be paced too fast for some, too slow for others, and just right for very few. Thus, the gifted student could finish the program in a significantly shorter time than the average, or he might use the extra time at his disposal to take advantage of broader educational opportunities. Second, it would facilitate a flow of transfer students into the program because completion of specified courses in a given sequence would not be required.

The program as designed is organized around a series of examinations in two groups: Group I to cover that subject material conventionally acquired during a four-year pre-medical curriculum leading to a baccalaureate degree, and Group II to cover subject material conventionally acquired during the first two (pre-clinical, basic science) years of a four-year medical school. The plan allows the student to obtain the background necessary to pass these examinations by combinations of the following processes:

(1) a series of formal courses offered in the various departments of the University of Hawaii.

(2) formal courses offered in other colleges and universities.

(3) self-instruction, using book lists, exhibits, films, tapes, and programmed instruction provided through the University of Hawaii and other sources.

Each student may also progress at a rate compatible with his ability and circumstances, and without being required to take the general examinations in any specified order or at specified intervals. However, since the subject matter treated in the Group II examinations is largely dependent upon material covered in the Group I examinations, it is expected that the series of Group I examinations would be completed before the student undertakes those of Gorup II.

In the later portion of the student's study program, it would be important for him to commit himself to one of four subsequent goals:

(1) to transfer into the third year of a four-year medical school in prospect of obtaining an M.D. degree.

(2) to continue graduate study in a biomedical science department as a candidate for a Ph.D. degree.

(3) to combine a further program of research and clinical training to obtain both M.D. and Ph.D. degrees.

(4) to discontinue further formal education, with the M.S. degree as a terminal degree.

If the student elects the first option, then his master's program would contain classes and tutorial instruction in Clinical Medicine. If instead he chooses to continue graduate study for a Ph.D. degree, his master's program would require more extensive independent research and preparation of a thesis.

In general, it is anticipated that there would be two types of study programs, one followed by the average students and one followed by the superior students. The average students would be expected to take the standard sequence of courses, requiring six years, and then take the general comprehensive examinations when they had completed suitable background courses for them.

The superior students, on the other hand, would engage in independent study to the fullest possible extent. They would be encouraged to take the general comprehensive examinations as quickly as possible. The time that they might spend in the program would vary depending upon the rate at which they progressed through their examinations and the amount of extra study that they had undertaken. Thus, a superior student might complete the entire program and be ready to transfer to the third year of medical school after less than six years, or he might spend six or more years in the program because he chose to extend his study in one or more areas significantly beyond the limits set by the minimal program. For all these decisions, each student would need wise and skillful guidance.

General Comprehensive Examinations and Degrees

The heart of the master's program in the basic biomedical sciences, the source of its unique flexibility and its principal contribution to medical education, would be the concept of a curricular structure built on general comprehensive examinations rather than on required courses. With the full development of this feature, the program would attempt a genuinely new and arresting solution to the puzzle of medical education today—viz., how to release the student from the accumulated restrictions of an overburdened curriculum while maintaining the integrity of his progress toward professional competence.

A baccalaureate degree would be awarded to all students when they had satisfactorily completed the examinations in Group I. At that time, all of the University requirements as now stipulated for the B.A. would have been met if the student had followed the core curriculum or its equivalent in independent study.

A Master of Science in Biomedical Sciences would be awarded to all students who complete satisfactorily the Group II examinations and who, in addition, complete the course in Introduction to Clinical Medicine, *or* who complete a research program as specified by the department sponsoring the research. Students fulfilling the research requirement would be those who are not planning to complete the M.D. degree.

Staff

Since the master's program in the basic biomedical sciences would replace the current pre-medical program, and since it is unlikely that the student load in the new program would be initially greater than the current pre-medical enrollment, no immediate need for increased staff in the College of Arts and Sciences is expected.

The basic biomedical sciences, however, are presently represented by only a small nucleus of faculty and will need considerable expansion. The projected increase in staff required for the master's program in the basic biomedical sciences, over a six-year period and for all categories of personnel, would be approximately 50.

Time Table

A preliminary presentation of the plan will be made to the Legislature in February 1964. Should approval to proceed to further planning be obtained, applications for capital improvement funds would be made to the U.S. Public Health Service and to private foundations in June 1964. Should applications for funds be successful, detailed planning would proceed from July 1964 to July 1965. Construction of necessary facilities conceivably could start by October 1965, with initial occupancy possible by April 1967 and instruction to begin September 1967.

During the interim period faculty recruitment should continue with the objective of starting instruction for a small number of students as early as September 1965, given legislative approval.

GRADUATE STUDIES

Role of the Graduate School

Future leadership in many phases of American life --economic, political, industrial, scientific, and cultural-- will unquestionably require training beyond the baccalaureate degree. Earlier in this century, for example, a 2-year normal school education was considered sufficient for teaching in our elementary schools. A generation ago these schools were abandoned or converted into 4-year institutions, and most school districts in the progressive sections of the country now require five years of collegiate training for the elementary school certificate. Many secondary schools now emphasize the master's degree as requisite for teachers. The trend is for more and more formal training for all types of employment in our increasingly complex society. In perspective, it can be stated with little equivocation that professional opportunities for holders of a bachelor's degree are about equivalent to those for high school graduates of 30 to 40 years ago.

Emphasis in the United States on higher education at all levels mounted at a spectacular rate after World War II. The effect across the nation on our system of graduate education was climaxed by the development of the atomic reactor and by other epoch-making discoveries and their byproducts, many of them originating in university laboratories. During the past 15 years, all major campuses in one degree or another have reflected the same forces of accelerated development at the graduate level. Research and graduate instruction have steadily become inextricably interwoven. Increasing financial support, both on the part of government and private industry, coupled with society's apparently inexhaustible demand for more and better trained personnel, have resulted everywhere in a relatively greater expansion in the graduate schools than in other segments of universities.

Though our national goals have thrust physical sciences and the technology of space-exploration into the forefront of the news, it is an illusion to think that the type of leadership we need can be produced without increasing our investment in education of many kinds. Our society needs varied sorts of specialists if it is to realize its full demands. We must therefore have schools and universities which know how to adapt themselves and the talents of their students to achieving a great variety of abilities. "More and more of our top students," writes James R. Killian, Jr., "whatever their background, should go on to graduate school. The world has moved on; one must learn more and learn it better if one is ever to perform effectively and achieve one's full potential." "What we should seek," he adds, "is to provide not only education for all, but also the best possible education for each." For those students of highest promise this means graduate study.

Exactly what that "best" education should consist of is a source of keen discussion in the national debate on the appropriate means and ends for educating our youth. At the graduate level, it is generally agreed, one of the most important guiding principles is that there should be no hard and rigid distinctions between theory and application, between learning to "do" research and learning to teach, between "pure" scholarship and its relevance to the human situation and man's social and ethical needs. The spirit emerging in the leading universities is one which seeks a greater awareness of the interrelations, the "open-ended-ness," of knowledge. In fact, it is this concern for the integration --for what might be called the symbiotic and mutually-reinforcing associations between branches of knowledge --which is resulting gradually in a closer interaction of undergraduate, graduate, and post-doctoral studies.

For Hawaii, a relatively new University, recognition by its educational peers as an institution of excellence is of first-rank importance. The presence of the East-West Center has attracted thoughtful interest in the University and raised timely expectations among expert observers and many well-wishing friends. Thus the University of Hawaii can do no less than seek every support it can find to achieve distinction in at least a selected range of fields in an abnormally brief span of time.

But excellence among universities is an ideal difficult to attain under the most favorable circumstances. Moreover, since the University of Hawaii must move steadily toward this status within the immediate future and with limited resources, careful appraisal of the problem and ingenuity in planning are an indispensable need. The guiding principal can be concisely stated.

Programs of instruction and the scholarly activity of the faculty must be of notable distinction. The standards of quality should compare very favorably with those of outstanding state universities. These standards should should apply within all levels of graduate work and should hold good across the various fields. Of course the chief measure of scholarly excellence is rigorous study at the doctoral level, together with the concrete productivity that should accompany research and creative scholarship. Within the range of our resources, our major efforts to achieve recognizable excellence must therefore be focused on fields of study where we may expect to achieve eminence by virtue of the special opportunities provided by our geographical location and ethno-cultural associations. However, by so concentrating our primary efforts we must be watchful that we do not deprive other fields of orderly development and fulfillment of their own aspirations and valuable goals. Certainly we must not in any way reduce the effectiveness of our already strong undergraduate programs. To do so would obviously be disproportionate and self-defeating of our total commitment as Hawaii's state university.

Enrollment Trends

Increasing at a considerably faster rate than undergraduate student enrollment, the number of graduate students expected in 1975 is projected at 7,100 (Appendix Table 11). Because this projection is based upon fall semester registration of students it is far short of the actual number which will be enrolled during a given year based on past experience. Graduate enrollment varies between sessions considerably more than does the number of undergraduates, because many graduate students take outside employment for several months to finance attendance during one semester or during summer sessions only.

Because all candidates for advanced degrees are guided by faculty committees and the academic requirements are handled mostly in a tutorial fashion, the faculty workload does not diminish appreciably if a student enrolls but for one semester instead of two. Added to the workload are those advanced degree candidates who enroll only in summer periods, but nevertheless require academic guidance and record keeping equivalent to those attending during the regular academic year. On this basis the 7,100 students projected as fall semester enrollees will actually total about 15,000 individuals for the academic year 1974–75 if the proportion of total to fall semester registrants remains as it has for the past several years (Appendix Table 15).

As the University develops distinction in some of its areas of emphasis, increasing numbers of mainland and foreign students are expected to seek entrance. Although the proportion of out-of-state graduate students is considerably greater than that for the undergraduates (43 per cent compared to 20 per cent), it is highly satisfying to point out that almost three-fifths of our graduate students in 1963 were local.

Because graduate-level education is highly individualized and largely research oriented, it is expensive in space, equipment, and faculty time. The actual cost to the State is greatly reduced, however, by the portion of the general workload carried by graduate students serving as teaching or research assistants at relatively low salaries, and increasingly by a cost-of-education allowance paid for students holding federal scholarships or fellowships. Moreover, a large share of the substantial extramural funds obtained to further the University's research program is used to support graduate education. A precise computation of the proportion of graduate study financed by extramural funds would be impossible to make, because of the inextricable association of research and graduate education, but it is safe to say that without extramural funds the University's graduate program would be small indeed.

Graduate Faculty

A few doctoral programs will be added in the next decade, but, as is true for other programs of the University, the main emphasis must be placed on improved quality of present programs. Prestige in a graduate program can be acquired only by selecting faculty members of superior scholarly ability and productivity, and by providing for them an academic climate conducive to rewarding achievement.

For many reasons a graduate faculty separate from the undergraduate faculty is undesirable. Thus, in the recruitment of new faculty members in all instructional departments the needs of the graduate program must be considered early in the process, and the Dean of the Graduate School continue to approve all appointments within the more senior professional ranks.

Although student-faculty ratios are a matter of concern with respect to undergraduate instruction, such ratios at the graduate level are much less meaningful. Graduate education, generally, approaches the tutorial system at its advanced levels. Because of the amount of research expected of a member of the graduate faculty, and in view of the great increase in numbers of graduate students in the coming decade, the ratio of students to teachers unquestionably should be lower than it is at present if we are even to maintain the present quality of instructional services.

Present Status

The University's Graduate Council has long subscribed to the policy that all fields of study leading to a bachelor's degree at the University should be sufficiently strengthened to offer work at the master's degree level. This policy has been implemented to the extent that only the fields of Health and Physical Education, Home Economics, Industrial Education, Mechanical Engineering, and Religion lack such advanced work. While some distinction has been achieved in several fields in which the doctorate is now offered, there are other areas which fall within the major emphasis of the University in fulfilling its educational role which have for some time offered excellent graduate work leading to the master's degree. By way of illustration, sociology with its wealth of interethnic social problems, drama and the theatre emphasizing Asian as well as Western productions, art and history of art taking full advantage of the Asian influence, music with considerable emphasis on ethnomusicology, to name a few.

Study for the doctoral degree, the highest degree offered by the University, is exceedingly intensive. It calls for supervisory faculty of the highest caliber, which by any definition means faculty actively engaged in continuing research. Doctoral study requires outstanding research facilities and library resources. For these reasons the policy of establishing Ph.D. programs has been guided primarily by the special opportunities for excellence available to the University by virtue of its geographic position and interest in the ethnical and multicultural dimension of certain areas of the social sciences and humanities. Productive scholars are attracted by these special opportunities to pursue their research and teaching. By taking advantage of this particular attraction to scholars, faculty of distinction and eminence have been and are being induced to join the University in ever-increasing numbers. They attract the best graduate students and usually are successful in attracting financial resources for their research and the support of their students. Moreover, they help develop proper facilities and library resources which add greatly to the University's strength and effectiveness. A considerable measure of success has thus been already realized in the fields of marine biology, biomedical sciences, tropical agriculture, geophysics, certain areas of the social sciences and of the humanities, and in the important supporting fields of chemistry, biochemistry, and physics. The doctoral degree is now offered in 18 fields of study.

Future Development

Program Development

Natural Sciences A rising demand for nurses with advanced training will be partially met by a program leading to the master's degree recently approved for implementation in February 1965. Under study for its feasibility is a program leading to a master's degree in Biomedical Sciences. As a new approach to pre-clinical medical education, this program is being designed to serve as the central framework of a School of Basic Medical Sciences. Should the total plan for this new school be approved, it is highly probable that the related, but still undeveloped, field of pharmacology would advance to the master's and possibly to the doctoral level, since biochemistry, a strong supporting field, is already advanced.

Faculty and facilities presently available on the campus make feasible now the implementation of master's and doctoral level studies in human and medical physiology. A development along these lines logically should arise from the basic biomedical science program, but no formal plans will be undertaken until this new program is considered for adoption by the Legislature.

As rapidly as is reasonable the graduate Department of Public Health will be expanded to meet the accreditation requirements of the American Society of Public Health. At that time the present Master of Science degree in Public Health will be superseded by the Master of Public Health (MPH), and eventually strengthened to offer the degree of Doctor of Public Health. With normal growth, augmented by students from the East-West Center, accreditation for a school of Public Health should occur in February 1966.

Oceanography, remains to be built up to the doctoral level. The completion and initial staffing of the Hawaii Institute of Geophysics and the establishment of a Department of Oceanography during February 1964, will make it possible to develop excellent advanced study in this field. The doctoral degree program should be planned and implemented by 1966, at which time faculty, research vessel facilities, and library resources will be adequate to support a program of this level. Immediate attention must be directed to strengthening further the Department of Mathematics and inaugurating a fuller curriculum in mathematical analysis. Advanced programs in geophysics, physics, and other highly quantitative subject matter areas are not operable unless the students come fully prepared in advanced mathematical theory and methods. Existing major computer facilities provide all the data processing and computational support needed. The immediate task ahead is to add to and improve the quality of the senior faculty in mathematics by attracting a few additional high caliber mathematicians, some of whom must build strength in the fields of numerical analysis and applied mathematics. Graduate work in physics, especially solid-state physics, will have to be augmented substantially to add to the strength being developed in electrical engineering and electronics.

Instruction to the doctoral level in the field of Electrical Engineering will certainly be required within four or five years. The trend in electrical engineering is towards greater emphasis on basic physics, thus as pointed out immediately above, both fields must undergo strengthening immediately. The importance of electrical engineering to the development in Hawaii of research-based electronic industries requires intensive emphasis on recruitment of highly capable, research oriented electrical engineers.

Social Sciences Although the University of Hawaii should be preeminent in certain aspects of the social sciences, its graduate and research record in these fields has been extremely uneven. High priority must accordingly be placed on strengthening present doctoral level programs and faculty in psychology, anthropology, political science, and the history of Eastern Asia. Sociology, a field which should be in the vanguard of behavioral sciences in Hawaii, likewise requires encouragement to reach the level of distinction proportionate to its importance and opportunities at the University of Hawaii. Within the orbit of sociology lie some of the most complex and urgent problems of the modern world, comprising a wealth of thesis topics awaiting attention by well-prepared, keenly motivated doctoral candidates. Regional economics and economic development, two outstandingly significant areas for research and graduate study in the world today, are particularly favorable for emphasis in Hawaii's graduate program: Hawaii's isolation is an asset, for it permits quantitative studies of a state economy not possible on the mainland. Our proximity to Asia, local interest in Asia among ethnic groups and considerable emphasis at the East-West Center on comparative Asian development bring our students into an orbit of economic theory and practice of great potential value.

The School of Social Work, long restricted in the production of professional social workers by a "built-in" bottleneck for field work placements in the social agencies of Honolulu, must be expanded to permit additional students to enter this shortage profession. Sociological changes in our society—an increasing number of elderly in the population, demand for skilled labor leaving an inevitable residue of those incapable of meeting requisite qualification, juvenile delinquency, etc.—clearly point to increasing demands for professional social workers. Perhaps the most important task facing the School in the period immediately ahead is to develop a plan which will permit enrollment to increase. A critical review of the present organization for field work placement indicates that the University can double its output of trained social workers by providing additional supervisory positions in existing social agencies. Continued study may reveal that a combination of reorganized field practice methods and additional supervisory staff will not only permit increased enrollment, but will also improve training techniques.

Interest in American culture and civilization among increasing numbers of East-West Center foreign grantees makes feasible and desirable the development of a formal curriculum leading to a master's degree in American Studies. Combining both social sciences and the humanities, the purpose of the program will be to acquaint the foreign student with the varied aspects of life, thought, and institutions in the United States. An American Studies curriculum has just been established after undergoing faculty and administrative review.

Humanities To fulfill its appropriate role as an American university in the Pacific Basin, and to satisfy demands made upon it by American grantees to the East-West Center, the University must develop doctoral programs in Asian languages and literature and in linguistics at the earliest possible date. The organization of the graduate Department of Linguistics in 1963 will lead to the establishment of a doctoral program by February 1966 at the latest. Concurrently, priority is being given to the acquisition of a high level faculty in Asian literature so that doctoral level programs can be established in Asian languages and literature no later than February 1967.

Although the field of English has not in the past been emphasized as an area for special development in Hawaii, it is possible that with the steady improvement of library resources and the systematic strengthening of staff, a doctoral level program will be ultimately feasible. A rigorously selective doctoral program stressing comparative Western and Asian literature is a long-range possibility for development.

Special attention given to theatre and drama over the past few years may well justify the establishment of a doctoral degree program in this field, with particular emphasis on the Oriental aspects. The facilities are superb, the faculty very competent and library resources are being improved continually. While this program is expected to involve only a selected few students, it could be outstanding and very influential in its special field.

Education As a result of phasing out of the training aspect of the College of Education's campus schools, and the prospect of an extensive educational research program using the campus schools for experimentation and demonstration, it is possible that advanced instruction can be combined productively with research to make doctoral level programs feasible. The transition in facilities, faculty and program orientation from training to research and demonstration will require several years. By about 1970 those doctoral programs in education made desirable by the new orientation of the training schools should be clarified and established. Certainly substantial and well-conceived original research will be required to remodel our elementary and secondary educational systems to handle increasing enrollments and still maintain or improve present standards.

Facilities

Because undergraduate instruction was the predominant objective of the University until the recent accentuated growth of the Graduate School, no special facilities for graduate instruction were provided in any building constructed prior to 1962. There is, therefore, an inescapable need to include in future buildings space for graduate student requirements sufficient to make up for the present severe lack. Adequate facilities now exist only in the fields of zoology, marine biology, geophysics, and microbiology. All other areas of advanced instruction are inadequately housed.

Current planning for the Graduate Research Library includes consideration of scholarly research needs of graduate students, especially in the more library-oriented fields of study (social sciences and humanities). Fully adequate financing of this new library will help meet a substantial share of the requirements in these basic fields.

Housing for new graduate departments of Linguistics and Public Health is wholly inadequate at present, but it is intended that they occupy part of Classroom Building IV, a structure hopefully to be jointly financed by the University and the East-West Center. Additionally, a greatly expanded undergraduate and graduate program in Asian and Pacific Languages will find its home there, as will other programs important to our foreign students, such as the English Language

Institute and the master's program in teaching English as a second language.

The rapidly expanding Department of Biochemistry and Biophysics is lodged temporarily in the Life Sciences Building in inadequate quarters designed originally for other purposes. The Department of Genetics, also in the Life Sciences Building, requires additional space. Preliminary space studies are underway to assess the requirements of an expanded Pacific Biomedical Research Center, the proposed School of Basic Biomedical Sciences and the School of Public Health. A single structure housing these biomedical programs will be coordinated with the present Life Sciences Building to provide adequate instructional and research space for all units.

Preliminary planning and a budget estimate have been made for a laboratory and classroom building to house all the plant sciences. About one-half the cost of this facility will be requested from federal sources. The departments of Botany, Plant Physiology, Plant Pathology, Horticulture and General Science would be included in this facility. A building of this type should enable our highly rated faculty to bring the University distinction in the tropical and subtropical plant sciences.

When the newly established master's program in Library Studies becomes operative, it should be related closely to the operations of a library. When the Graduate Research Library is built, the technical staff for the entire library system will be housed in it, making available for classrooms and offices of the proposed new school the space formerly occupied by these personnel in the Sinclair Library.

Ideally, the several departments and research agencies of the social sciences should be housed sufficiently close together to permit maximum development of interdisciplinary instructional and research activities. Crawford Hall long ago became too small to house the social sciences, and the inevitable onset of physical separation of the various disciplines occurred. The process will continue until a main structure is built in which all these departments and research agencies can be brought together.

The lack of a campus development plan based on academic needs (such a plan is now being prepared) has inevitably led to unfortunate locations, sizes and contents of many of our buildings. However, much good can be accomplished toward alleviating this situation by following a firm policy of keeping related university activities in close association. New structures should be planned with this aim in mind, and every opportunity must be seized to accomplish this objective by relocating staff to effect greater academic homogeneity when existing buildings become vacant. Graduate students, unlike undergraduates, have close physical ties to certain rooms and buildings. It is important to develop these physical facilities so that the maximum possible intellectual interchange occurs between faculty and graduate students of closely related disciplines.

RESEARCH

Role

Among the three major functions of a land-grant university—teaching, research, and service—the most impressive new development during the past quarter century has been the enormous increase in the amount of research. Although research is a traditional and indeed essential function of a university, its recent growth to new dimensions now requires a new examination by the people of our state.

Paramount in importance among a university's role is the necessity to develop skilled and sensitive minds. Regardless of facilities, faculties, students, and libraries, universities do not exist today unless they are centers of research activities. Institutions not exploring the frontiers of knowledge remain at the level of training schools, not universities, whatever official title they may bear. Training schools cannot develop minds capable of helping to solve the problems of this age.

Graduate instruction flourishes best in conjunction with active research, and research flourishes best in a university atmosphere. The notable advances in both graduate education and research at the University of Hawaii over the last decade are ample evidence.

If research and graduate education are inextricably inter-related, research and undergraduate education are only slightly less intimate. The "explosion" of knowledge in this generation has made undergraduate teaching increasingly demanding and difficult for faculty who neglect research and fail to maintain the motivation imparted by searching the frontiers of knowledge. In the Introduction to this report it was pointed out that ". . . fresh insight of the teacher-scholar also brings an urgent stimulation and vitality to classrooms as well." This statement applies equally to graduate and undergraduate instruction.

To attain the major aims of the University, undergraduate education, graduate education, and research must be maintained in adequate balance and properly correlated, so that each can effectively strengthen the other two. A quickly rewarding means of correlation is to attract faculty members who wish to engage in all three activities. The proper combination of education and research thus serves to invigorate and continually improve the scholarly objectives of a university and encourage the kind of intellectual milieu which characterizes America's leading institutions of higher learning.

The destiny of the University's research effort, like that of other aspects of its academic responsibilities, has been chiefly imposed upon it by geography and world affairs. Unlike most state universities whose area responsibilities are usually state-oriented, the University of Hawaii has basic obligations, or opportunities, however they may be viewed, which involve not only our state, but extend like giant spokes from our island hub to distant Pacific archipelagoes, indeed even to the Asian mainland. How shall we proceed to fulfill these wide-ranging and literally adventuresome responsibilities?

The Scholarly Climate

The availability of special research opportunities is of first rank importance in the attraction and retention of the most able faculty members. But, in addition, the University must provide the proper scholarly climate for encouraging research, if it seriously hopes to fulfill and bring into being the potential contributions of these faculty members. A widespread recognition by the public that research is a fundamental responsibility of each faculty member, the continued improvement of facilities and library resources for research, and the budgeting of working time for most effective integration of teaching, research, and service are essential components for creating a mature university community.

Organization for Research

Research, by its nature, requires a talent for seeing around the corner—in short, original and penetrating ideas. New knowledge provides new opportunities, opens up new patterns of organization. Today's methods and organizational patterns may not be effective next year or the year after. It is quite reasonable to expect that our present concept of the University's research agencies may be altered in the near future. Ever present in an institution of higher learning is the tendency to perpetuate administrative organization beyond the point of maximum effectiveness. Therefore continual review of organized research units must be made to eliminate those which have outlived their usefulness, to reconstitute those which can operate more effectively under a different pattern of organization, and to add units for which a new need provides justification.

Investigations of broader problems of human society increasingly require the skills and methodology of many basic disciplines. Such demands have given rise to the development of organized research institutes or centers which cut across the traditional academic departments in order to make possible interdisciplinary approaches. Such consolidation of research effort enables the University to bring all its appropriate resources to bear on identified broad problems. In this way duplication of effort is eliminated as well as fragmented attacks on complex problems. Simultaneously, the total effort is strengthened through mutual understanding and enrichment of the participating researchers.

Despite the focus on research institutes and centers, individual or relatively independent research scholars outnumber those working with organized research units, and the importance of the former to the total research and educational effort of the University must not be minimized. Time, funds, and supporting services are at least as important to the independent research scholar as to those within interdisciplinary units, and the contribution of the unaffiliated faculty member to graduate education should be and could be equally great.

Funding of Research

Because financial support of research is complicated by the participation of federal, state, and private agencies, serious difficulties for universities have appeared on the national scene. Heavy reliance by all universities on extramural funding for research, while bearing many blessings, also introduces many problems which are becoming more critical as the extramural agencies assume an ever-increasing proportion of a university's research budget. In planning the research program at the University, the following considerations must be emphasized: (1) that extramural funds do not pay all the costs of research; i.e., funding agencies require some participation by the University, particularly basic staff and equipment; (2) that extramural funds are not available to all divisions of the University on an equitable basis; and (3) that extramural funds are not available to young scholars who, because of their lack of experience, have not developed a standing in research which enables them to compete nationally for financial support.

The first problem must be met by providing adequate state-budgeted funds for principal research and technical staff, and for basic supplies and equipment which extramural agencies expect a university to maintain. Ordinarily, extramural funds can be sought for additional technical assistance, special supplies and equipment, and costs of essential travel.

The second problem must be met by adequate state budgeting for support of research in those fields in which extramural support is ordinarily not available, namely, the humanities and the non-experimental disciplines of the social sciences. Time, travel, and library resources are the aspects which all require additional state appropriations in these fields.

The third problem must be met by state-budgeted "seed money" to launch young scholars on a research project which, when carried to the point where the problem's potential and the young scholar's capability are proved, will attract extramural funding.

Within the University's Division of Organized Research the fund labeled "Faculty Research Committee" is used to meet the needs of problems "two" and "three" above, and to some extent problem "one." During 1962–63 the fund proved completely inadequate to meet the needs of the 570 full-time equivalent instructional faculty members. Had the amount available been divided equally among them each would have received about $35 in support of his research. If the University is to emphasize the improvement of quality of its faculty, adequate support of research by faculty members must be provided. Meritorious individual requests for research funds to the Faculty Research Committee during 1962–63 totaled approximately $150,000 or an average of about $250 per faculty member. A goal of at least $200 per year for each instructional faculty member is entirely realistic and would serve as a very valuable stimulus to the progress of the University and contribute greatly to its institutional maturity and prestige.

Organized Research Agencies Within the Division of Organized Research are three basic types of research units. Two units (Land Study Bureau, Economic Research Center) were established by law to provide specific professional services to state governmental agencies. Four (Hawaii Institute of Geophysics, Hawaii Marine Laboratory, Pacific Biomedical Research Center, Social Science Research Institute) provide facilities and staff to focus primarily on broad interdisciplinary problems. One (Statistical and Computer Center) provides computational and data processing services to the other research units, as well as to research scholars working independently.

Two new research agencies, the Bureau of Educational Research and the Engineering Experiment Station, have been established within their respective colleges and presently outside the jurisdiction of the Office of Research Administration. Because of the complexity in funding research activities in universities and the traditional interdisciplinary approach required for virtually all significant social and scientific problems today, it is strongly recommended that these two agencies as well as the Hawaii Agricultural Experiment Station and future organized research activities be administered through the Office of Research Administration. Experience has demonstrated that the nature and extent of research programs can be fitted more precisely to the needs of the broad field involved, and that the complex administrative details can be handled best, through policies implemented through a centralized office. Actual research programs should be administered, as at present, by the director of each organized research agency.

The programs and structure of organized research activities are described below, including programs which it is anticipated will be established in the years immediately ahead.

Bureau of Educational Research

Role

The major purpose of the Bureau of Educational Research is to conduct inquiry into fundamental problems of education. Among the primary concerns are problems in the teaching and learning processes, child development, curriculum planning, and guidance. A secondary purpose of the Bureau will be to conduct research into various applied areas such as administration, personnel selection, school plant management, school surveys, and mass media instruction.

The Bureau is intended also to serve as the University's research arm for education in the state and the Pacific Basin to help keep our educational system abreast of societal changes, as well as to propose and test desirable innovations which will contribute to the effectiveness of our organized educational effort.

Program Development

The Bureau was established by legislative action in 1963. Staffing will not be complete until September 1964. A highly qualified director skilled in research on learning is now being sought. A minimal staff is now serving in an advisory and consultative role to the faculty of the College of Education and the University Laboratory Schools to encourage existing research interests. Additionally, preliminary long range plans for the Bureau are gradually being evolved.

The planned reorganization of the University Laboratory Schools so as to turn them into research-demonstration-training centers will provide excellent facilities for longitudinal studies of the processes of child development through several grade levels as well as for controlled experimental studies of basic educational problems. Kinds of research problems now envisioned are: (1) experimental studies of the impact of educational television and other audio-visual materials on the nature and quality of learning; (2) studies of the processes of child development; (3) evaluation of curriculum materials and experimental studies of the effect of major curriculum innovations on learning; (4) studies of personality and social variables related to effective performance as a teacher; (5) experimental studies of the effectiveness of team teaching on learning; (6) the development and experimental testing of programs of education for the academically gifted as well as slow learners; and (7) study of training programs for supervising teachers.

The Bureau is expected to contribute to the graduate program of the College of Education by facilitating thesis research. As in other organized research agencies on campus, staffing of the Bureau will be on split-appointment with the College's academic departments and the University Laboratory Schools.

Economic Research Center

Role

The Economic Research Center was established by law in 1959 to conduct research on the economic effects of proposed and enacted legislation and generally to undertake long-term, basic economic and statistical studies useful for the understanding and development of Hawaii's economy and welfare. The role of the Center may be interpreted broadly to include in its research program a wide range of economic problems, including those of interest to the business community as well as those of interest to the legislature, and state, county, and federal governments and other groups in the community.

Present Status and Program

The Center's basic program is carried out by a small staff of permanent professional economists. Frequently, special requests for research are made by various governmental agencies which provide special funds for the purpose. These special projects are usually carried out by visiting specialists with the assistance of a regular professional or junior professional staff member of the Center.

The research program of the Center embraces both short- and long-term studies. The former are topical, policy-oriented studies and are usually requested by the legislature or its committees from session to session. Most of the budget, both regular and special, is spent for these short-term studies. Long-term research on Hawaii's income-expenditure accounts, input-output tables and external trade statistics has also been undertaken by the Center during the last few years. These studies, besides their intrinsic value, are designed to improve the quality of the short-term, policy-oriented research by supplying data, perspective, and background.

Reorganization and Program Development

The experience of the past three years has clearly shown the need for a broader program of long-term basic studies and changes in the organizational structure of the Center, if the functions assigned to the Center are to be carried out fully and well. The Center can be most effective by encompassing both economics and business, and thus might better be named the Economic and Business Research Center. It should have a regular budget adequate for its projected work load, supplemented by funds from the legislature or other clientele. Its staff should include a core of full-time personnel including a well-qualified director, junior professional economists, and clerical personnel. Most of the research, however, should be done by specialists from various academic departments of the University serving temporarily with the Center, in some cases for a semester or for longer periods when continuing research on larger projects is involved. Since a great deal of research on local problems is likely to be of an interdisciplinary nature, these arrangements with various academic departments would make possible needed flexibility and a wide range of choice in selecting specialists for the various projects. Moreover, graduate students seeking topics for thesis research can be interested in significant economic problems within the scope of the Center's responsibility.

The Center should continue to be under the over-all administration of the Director of Research who would be responsible for screening research projects proposed, after consultation with the director of the Center and others. The criteria for acceptance of a project would be: (1) the project—because of its subject or methdology to be employed—has some relevance to the long-range program of the Center; (2) the availability on campus of persons qualified to do the research, and (3) the availability of funds.

While the requests for short-term studies would be largely determined by the needs of the legislature, departments of the state government and others, the long-term studies should be selected with a view to achieving the other of the two basic aims of the Center: namely, to promote the understanding and development of Hawaii's economy. Fields of study selected from a broad range of research topics and appropriate for Hawaii are: the business and economic aspects of tourism; studies of various Hawaii industries taking into account their economic, technological, and managerial features; research on problems of small and new businesses; quantitative studies of Hawaii in the trade pattern of the Pacific Basin. Such significant studies as these should be added to the present work on income-expenditure accounts and input-output tables. To cover these topics, the Center's budget should provide more funds for long-term research than has hitherto been assigned.

Engineering Experiment Station

Role and Present Status

The Engineering Experiment Station was organized in 1961 to encourage and administer faculty and graduate student research in engineering and to meet the needs of the local economy for engineering research. A broad program of research has been initiated in structural engineering, water resources, hydrodynamics, sanitary engineering, electronics, and mechanics. This program has been supported in a subminimal manner mainly through a small operating budget from state appropriations. Extramural support is developing rapidly, but additional state supported positions are required to mount a program of significance.

The Station utilizes laboratory facilities of the College of Engineering, as well as space for ionospheric research and hydrodynamics in the Hawaii Institute of Geophysics, and shares with the Institute the hydrodynamic laboratory facilities at Kewalo Basin.

Program Development

The program of the Engineering Experiment Station must be expanded with the graduate instructional programs of the College of Engineering to provide research opportunities for both the faculty and graduate students. Engineering research in many fields is needed to promote the economic development of the state. A special effort of considerable magnitude must be made in the field of electronics research and development to help provide back-up support for a prospective electronics industry and space research in Hawaii. Working closely with the Hawaii Institute of Geophysics, the Experiment Station is now started on hydraulics research important to the state's harbor and shoreline development.

Most of the personnel working in the Station will be regular members of the instructional faculty who will be expected to combine instruction with significant research. Increasing financial support for expanded operations will doubtless come from extramural sources as the faculty increasingly engages in well-conceived research projects.

Facilities for engineering research are totally inadequate, but will be planned in a new engineering building.

Hawaii Agricultural Experiment Station

Role and Existing Programs

The Experiment Station is responsible for the research function of the College of Tropical Agriculture. Currently, there are 164 active research projects in the Station, most of which place emphasis on problems of diversified agriculture. Many of the projects are carried out on the branch stations and farms distributed throughout the state. In addition, cooperative experiments are in progress on private farms, ranches, and orchards. In the land-grant tradition, the entire state is the campus of the University of Hawaii, largely through research and extension activities of the College of Tropical Agriculture.

Over the years the research of the Station has had a substantial influence upon the development of the economy of the State, sometimes in spectacular fashion. For example, the crop log of sugar cane, a comprehensive method of diagnosing the needs of the growing plants, has contributed significantly to the high yields of this crop and has helped sustain sugar production as an important cornerstone of the state's economy. Macadamia nuts have prospects of becoming a major export product. This possibility results largely from work done on this plant over the years by the Station in selection, propagation, and fertilization. Similarly, H.A.E.S. studies on the genetics, selection, culture, and postharvest treatment of papaya account partly for its present status as an export commodity with considerable potential for expansion.

Many on-going studies are providing a background of information upon which future economic expansion will certainly be based. These include work on production, processing, and marketing of fruits such as guava, passion fruit, mango, and lychee, all of which have latent potential as export commodities.

Hawaii still imports much of the agricultural produce consumed in the state. Hence, research continues on the production of vegetables, beef, eggs, milk, poultry, coffee, and animal feeds with increased emphasis on the economics of production and marketing.

Commodity advisory committees in coffee, dairy, food processing, macadamia nuts, poultry, swine, beef, and papaya are providing an exchange of information between producers and other industry representatives on the one hand and College personnel on the other. Through these committees the most urgent problems in production and marketing are brought directly to the attention of the research workers, and the College personnel have an opportunity to explain the most recent results of their research and its application to problems of the industry.

Research by graduate students in agricultural subjects has increased greatly during the last few years, and many of these studies have been of direct help to the Station's projects. Extramural funds have increased markedly during the past three years, and have been channeled into basic research of long range value to Hawaii's agriculture. Graduate students, especially, are involved in these more fundamental studies relating to agricultural problems. An important factor involved in the administration of the Station is maintaining a balance between the more fundamental research and investigations directly aligned with field problems.

Program Development

The Experiment Station plans to continue its emphasis on research in areas of agriculture which have prospects of broadening the economic base of the state. Expanding export crops, now mainly represented by macadamia nuts and papaya, will continue to require assistance in cultural, pesticide, and selection research. Byproducts of papaya are important subjects for research in the immediate future. Among potential export commodities, such as the guava, passion fruit, lychee, mango, banana, and avocado, an intensified program in all phases of production and marketing is needed. Special commodity treatments which will satisfy quarantine requirements for export will require investigation on an increasing scale. Establishment of a new agricultural product, even an exotic one, in today's American market is an undertaking of considerable complexity and requires research every step of the way through selection and improvement, estimates of market potentional, production, processing, sometimes shipping, and finally marketing. The Station's staff is organized to accomplish all these phases for any potential export crop.

Many agricultural commodities which contribute mainly to the "pocket market" of Hawaii need continued research, especially on techniques which will aid in reducing production costs and improve their competitive positions in relation to imports.

One of the greatest unrealized opportunities for expanding the economic base of the state is in timber production. Over a million acres of Hawaii's land could be in productive forests without interfering with any other uses for which the land is needed. Under proper management, about one-tenth of this area (100,000 acres) would be required to produce as much lumber as is now consumed in Hawaii, yet the state now produces but one per cent of its annual consumption of 100 million board feet.

A number of research programs of high priority must be carried out if a substantial lumber industry is to develop in Hawaii.[7] Perhaps of greatest urgency is research on the market potential of the more expensive woods which can grow rapidly in Hawaii. Although the University is presently contributing to forest research in several areas, there is no coordinated program focused on major needs of the industry. Increased emphasis on forest problems by the Station is clearly needed. Because both federal and state agencies are involved in forestry research, a coordinated program must be developed to bring the specialized talents of University personnel to focus on problem areas which can supplement efforts of the U.S. Forest Service and the State Division of Forestry.

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[7] *A Wildlife Research Plan for Hawaii*, Department of Agriculture and Conservation, State of Hawaii.

Although the Experiment Station traditionally has concentrated its efforts on diversified agriculture, considerable research has also been done on the state's leading crops, sugar cane and pineapple. There is little doubt that an increased research effort on these major crops would be rewarding, particularly where special aptitudes of Station personnel can supplement the programs of the research stations maintained by the industry.

Irradiation Facility

Among prospective programs almost certain to be inaugurated in the very near future is research dependent upon the installation of a multipurpose irradiation facility, a proposal for which is now being prepared for submission to the U.S. Atomic Energy Commission. This installation, to be used cooperatively by the University and the U.S.D.A. Entomology Research Division, would be used mainly for research on disinfestation of exportable fruits and vegetables for quarantine purposes, and for the beneficial effects of radiation on shelf life of plant export commodities.

A pilot irradiation plant is contemplated for construction in two phases, the final design for the larger quasi-commercial unit to depend on the results of preliminary experiments carried out by a small, comparatively low cost irradiator. These studies will necessarily include effects on ripening, quality and shelf life as well as the internal physiological changes induced by the treatment. It is essential that this facility be located on the Manoa campus with ready access to post-harvest physiology, pathology, biochemical and entomology laboratories of the College, and laboratories of the U.S.D.A. Entomology Division. Should irradiation prove a suitable treatment for exportable commodities, full-sized irradiators could be constructed at major shipping sites nearest the production areas.

Pesticide Residue Laboratory

Thousands of new chemicals are constantly being developed to control weed, insect and fungus pests of crop plants. Frequently, the future success of an industry dependent upon a plant commodity rests on whether or not certain of these pesticides may be used safely. New chemicals must be screened and approved for use as pesticides by the Federal Food and Drug Administration and the U.S. Department of Agriculture. Approval is obtained only after field experiments have been conducted and shown that the material is effective, is not harmful to the crop and that no residues of the chemical or possible deleterious products of its metabolism are present within the plant, fruit, or flesh in quantities above tolerance limits.

A high demand for help from the state in making pesticide residue analyses has developed on the part of local producers of several plant crops as well as from chemical companies. This demand increases continually, because both the federal and state laws apply so that coverage is extended not only to interstate commerce but to locally consumed products, thus affecting literally every farmer in the state whether he knows it or not.

If a pesticide residue laboratory is established, its primary function should be to analyze plant and animal products for pesticide residues, both as part of a program for screening new pesticides for use on locally grown plant and animal crops and for ascertaining the extent of contamination and accumulation of regularly used chemicals considered safe if ingested in minute quantities. Other important facets of such research would be to ascertain the effect of pesticides on growth and quality of plant and animal crops as well as to devise new or improved analytical techniques especially suited to Hawaii's special problems.

Complicating the pesticide picture are the many facets involved. Aside from food production, the implications of pesticide use on water supply, wildlife management, public health, public utilities and even national defense are bound to raise serious future concern. Rather than have the research and regulatory analyses scattered about in all these agencies it makes eminent sense for the University to assume the leadership in seeking a comprehensive solution to the problems. Properly planned, a single pesticide laboratory on the Manoa campus could be used cooperatively by the state departments of Agriculture and Health and other governmental agencies in carrying out their regulatory functions.

Staff Development

Professional level staff will be required to man projected new programs such as the irradiation facility, pesticide laboratory, and forestry research. However, the greatest manpower requirement during the next ten or fifteen years will not be doctoral level personnel, But rather well-trained junior professional technicians with terminal baccalaureate or master's degrees to carry out the more technical and routine procedures of research programs both in campus laboratories and on the branch farms. Presently, the ratio between junior-and the senior-professional personnel is much too low for the most efficient handling of the Station's research activities.

Branch farms, especially, might be staffed appropriately by junior professional technicians and farm laborers. The stationing of doctoral level personnel on branch farms for protracted periods is undesirable, because of the isolation which such highly specialized personnel would experience. Probably as a general policy top rank personnel might better be located on the Manoa campus where they can function in the formulation and design of experiments to be conducted on the branch farms, and can analyze and interpret data gathered and transmitted by junior professional field supervisors. Junior professional technicians, together with an appropriate complement of farm laborers, should prove the best staffing pattern for field stations.

Increased employment of junior professional personnel by the Station, as well as by other units of the University, will necessitate a change in the present employee classification scale adopted by the Regents for academic personnel. A single scale exists at present which is based on regular advancement in rank and salary for those persons holding a doctorate. Skilled technicians with baccalaureate and master's degrees are barred from advancement at a relatively low level. A separate classification is needed for skilled technicians if the University's research program in all its aspects is to advance properly.

Facilities

On-campus Facilities Reference to development of on-campus facilities for the College of Tropical Agriculture has been made earlier (pages 33–34). The proposed Plant Sciences building and new facilities for the Entomology department, now housed completely inadequately in wooden "fire-trap" buildings, will suffice for the program development envisaged. Should the suggested irradiation facility and pesticide residue laboratory be approved, proper facilities must be added to those listed above.

Off-campus Facilities A number of experimental farms recently established throughout the state require capital improvements. However, before additional funds are invested, a thorough review of the present policy of establishing several small branch farms in areas of differing climatic conditions should be made. Serious consideration should be given to the possibility of developing fewer, and perhaps larger, farms where the overhead costs may be reduced, with experimentation in various climatic zones handled through short-term leases of parts of private farms. Prolonged use of experimental farm plots tends to negate results because of inevitable alterations of the soil induced by repeated experiments. Short period experiments on a succession of farms should prove vastly superior to prolonged use of single plots.

Hawaii Institute of Geophysics

Role

The Hawaii Institute of Geophysics was organized in 1956 to take advantage of the unique position of Hawaii as a national laboratory for geophysical research covering the broad field of the earth sciences. A number of unusual advantages for geophysical studies are present. For example, high mountains and clear air present almost unequaled possibilities for high-altitude and solar research. Active volcanoes can be observed at close range. The changing pattern of cloud and rain in relation to surface features and air currents offers a wide variety of conditions for study of rain-producing processes. Special features of soil genesis, coral reef and beach development, and ground water occurrence are of both scientific interest and practical importance.

Additionally, Hawaii's mid-ocean position makes it an especially favorable base for the study of ocean-wide and world-wide phenomena. It has special advantages, for example, as an observatory monitoring the activity of the seismic belt surrounding the Pacific and the tsunamis generated there. The thinness of the oceanic crust makes investigation of the underlying mantle especially attractive. Typhoons originate, mature, and traverse the Pacific; the jet stream flows through its upper atmosphere. From Hawaii as a hub, the geographic locations for the study of all these phenomena can be easily reached.

Present Status

In the seven years since its organization, active research programs have been started at the Institute in meteorology, coastal geology and oceanography including tsunamis, rock, soil, and volcanic gas chemistry and physics, and atmospheric, cosmic and solar physics. Areas of research presently being developed are the geophysics of the earth's crust and mantle, including seismology, physical and chemical oceanography, and hydrology.

It is planned that the basic staff of the Institute should include about 40 positions, the largest number at the professional level, a smaller number technical and clerical. The staff list actually includes many more persons, because a number of research associates and assistants are supported through extramural research contracts and grants, and because of the policy of making joint appointments with the geophysical and engineering teaching departments. This policy fosters the close liaison between research and instruction which must be essentially inextricable at the graduate level.

The major facilities of the Institute were provided primarily through a National Science Foundation grant of $3,000,000. These facilities include the Institute building on the Manoa campus, an astrophysical observatory on Haleakala, Maui, a seismographic observatory in the Lyon Arboretum at the head of Manoa Valley, and a 124-ton oceanographic research vessel, *Neptune I.*

The campus research center, completed in the spring of 1964, contains laboratories, offices, and shops of the Institute, as well as the University's Statistical and Computer Center. Instructional space has also been provided in this building by state appropriation for the departments of Geology and Geophysics, Meteorology and Oceanography.

The Haleakala Observatory includes an airglow-zodiacal light observatory and the C.E. Kenneth Mees Solar Laboratory which has just been completed and equipped. Also at the observatory is the satellite-tracking observatory operated by the Smithsonian Institute. Arrangements have been concluded for the location there of a Department of Defense infra-red observatory to be jointly used by University personnel. With the completion of these facilities, the Haleakala Observatory will be a major world center for astrogeophysics and astronomy.

The Manoa seismographic observatory will house seismographic equipment for the recording of both nearby and distant earthquakes.

Financial support for geophysical research stems partly from the needs of the local economy, and partly from national and worldwide interests. Most of the funds for the Institute are derived from federal agencies; a lesser amount from state agencies; and a very small portion from other universities for the support of cooperative research programs. Extramural grants and contracts totaled about $1,000,000 in 1963, and will increase sharply as the staff and programs develop.

Program and Facility Development

During the next 10 to 12 years the Institute will develop research programs in fields such as solid earth geophysics, oceanography, and astronomy, and will strengthen existing ones. A few additional positions must be added for new or expanded programs. Most of these positions will be shared with teaching departments following the present pattern. Development grants from federal agencies are likely in this broad scientific field, and they will be sought to relieve the state of the initial support of programs. Such grants can also support student scholarships, operating and equipment costs.

Some additional facilities will be required for future development of the Institute, but these can be provided largely, if not wholly, by federal facilities grants or through special extramural research projects. These additional facilities will include vessel conversion and, eventually, an additional and much larger vessel, vessel-servicing facilities, and an oceanographic-marine geophysical facility. A hydrodynamic model facility of unique capabilities for oceanographic and coastal engineering research is expected to become available to the Institute at Kewalo Harbor when model studies of tsunami effects and protective measures for Hilo Harbor are completed by the U.S. Corps of Engineers.

The state will be requested to provide only the basic salary costs and housekeeping expenses of the Institute plus funds for a nominal amount of equipment, most of which will be required in connection with graduate instruction and research projects of special interest to the state, such as the tsunami research program and beach erosion studies.

Because the research programs of the Institute are intimately related to graduate instruction, development of the Institute cannot be separated from concurrent development of related teaching departments. It is highly probable that strength in both instruction and research can be gained by the creation of a consolidated Department of Earth Sciences, with sections representing geology, solid earth geophysics, geochemistry, hydrology, oceanography, meteorology, cosmic physics, astronomy, and theoretical geophysics. Such consolidation will be the subject of intensive study. The success of the Institute also depends critically on the programs of the departments of Chemistry, Physics, and Mathematics.

With proper coordination of persons and programs, together with suitable support from both state and federal sources, the Hawaii Institute of Geophysics can capitalize on its potential and contribute significantly to the reputation of the University everywhere.

Hawaii Marine Laboratory

Role

The Hawaii Marine Laboratory was organized in 1948 with branches at Coconut Island in Kaneohe Bay and at Waikiki in the Honolulu Aquarium. Its objective has been to encourage research, mainly in the marine biological sciences, including fisheries, by providing research facilities and technical services for the faculty of the University, graduate students, and visiting scientists. Its success is measured by approximately 200 publications of research which have been completely or partially supported by the Laboratory's facilities. These contributions deal with many aspects of marine science, including studies of life history, behavior and identification of fish and lower animals, poisonous and toxic marine animals, fish poisoning, and fundamental research on life processes using marine animals for experimentation. All investigations, except some graduate thesis research, have been supported primarily by extramural funds through research contracts and grants provided by federal and state agencies.

Present Status

The main laboratory building at Coconut Island was destroyed by fire in December 1961, greatly curtailing the activities of the Laboratory. An emergency partial replacement structure has been completed, funded by a grant from the National Science Foundation. The state has provided funds for a new permanent laboratory which is scheduled for completion in early 1964.

During the formative years of development, the Laboratory has operated on a minimal budget which provides almost no professional level staff, fewer than necessary subprofessional staff and inadequate funds just to maintain the physical plant and its basic supplies and equipment. Because the marine sciences represent an area in which the University can achieve distinction, and because there is a large graduate enrollment in the field of marine biology, the role of the Laboratory in supporting both fundamental and applied programs in the marine sciences is of such extreme importance to the future of marine science in general and the state's economy in particular, that a comprehensive program of development and expansion is definitely envisioned starting immediately.

Program Development

Environmental Research The broad goal of this program will be to understand and elucidate the variety, variability, and dynamics of marine organisms. To date there has been no systematic plan for the development of knowledge of the inshore and near offshore waters and the animals which they support. The environmental program, embracing both descriptive and dynamic aspects, would provide a mechanism for the graduate training of research scientists and simultaneously would contribute a fund of basic information of inestimable value in analyzing problems such as waste disposal and the assessment of the potentials of the fishery stocks.

Most of the research projects conducted by permanent University staff, graduate students, and visiting scientists receive major support from extramural funds. Almost without exception the basic studies carried out lead directly to important practical applications, and are essential if we are to comprehend and some day manipulate the inshore fisheries of Hawaii to increase their productivity.

While Hawaii is richly endowed with a great variety of fish and other marine organisms, the waters seem to be only moderately productive. The shallow inshore waters support a relatively greater weight of fish per unit area than the open ocean, but the total bulk is small because of the narrow shelf area surrounding the islands. While the density of off-shore species is less, their total bulk is great because of the vast expanse of open ocean. The offshore species such as tunas and marlins constitute the best hope, and possibly the only hope, for substantially expanding Hawaiian fisheries.

Although the inshore fisheries may provide only limited possibilities for expansion, nevertheless they constitute a valued supply of excellent table fish, and are a source of income to a number of commercial fishermen and a source of recreational fishing to many people. For many of the inshore fishing areas about the main islands, the problems are those of prudent use of and management of the resource.

The federal Honolulu Biological Laboratory spends about one million dollars annually for programs concerning the high seas pelagic fishery resources and oceanography of the central Pacific. The orientation of these programs towards specific problems of Hawaiian fisheries is slight, but their potential benefits to Hawaiian fisheries may be very great.

However, to complete the analytical picture for Hawaii, a survey of the statistics of fish catch and effort for the individual fisheries is required, especially those of inshore and bottom fishing grounds about the main islands. Such a survey should provide measures of the magnitude and potentials of the actual fishery resources. Additionally, critical examination of the economics of the local fisheries has long been needed, and is now in progress.

These two investigations must form the framework for further programming and planning. They should provide the means of estimating the magnitude of investments by the state for the investigation and development of fisheries as justified by markets, yields, and fishing costs. They should also provide guidance in determining the direction of the state's effort which may involve legislation, programs of economic assistance, gear development, and biological research. The inauguration of detailed, fisheries-directed programs by the Hawaii Marine Laboratory and other agencies should await the two surveys, one economic and the other biostatistical, to decide on the direction and magnitude of support needed.

It would be appropriate for the state, as a matter of policy, to recognize and bring fishery contributions of the University into better focus by specifically appropriating funds for them. Such funds could support graduate students as well as faculty working on fishery problems. A definitive program in this regard will be prepared for submission during 1964-65.

Summer Teaching Institute As programs of environmental and fisheries research are stepped up, the training of marine and fisheries scientists must be accelerated and augmented by offering a Graduate Summer Teaching Institute in the Marine Sciences. It is proposed that this be inaugurated under the aegis of the Hawaii Marine Laboratory, and closely coordinated with the teaching faculty of the various University departments which would participate. This program can be developed at little cost to the state as it would be largely self-supporting by federal grants which are available for such purposes, if basic organizational and clerical staffs are available.

Cooperative Sport Fisheries Research Unit The potential value of the sport fisheries in Hawaii in providing recreation for our local people and for tourists is difficult to estimate, but it is believed likely that its value substantially *exceeds* that of the commercial fisheries. Federal funds have already been made available to the State Division of Fish and Game for research in the sport fisheries. Additional research and training potentials lie in establishing a cooperative research unit involving the federal Bureau of Sport Fisheries and Wildlife, the State Division of Fish and Game, and the University of Hawaii. The cost to the state would be minimal, because of federal participation.

Facilities and Staffing

Coconut Island Branch The present site of the Laboratory on Coconut Island has many advantages for pursuing environmental and fisheries research. Kaneohe Bay is a protected body of water with a rich fauna of invertebrates and reef fishes which are readily available for collection and study. The Laboratory is well equipped with natural experimental ponds, small collecting vessels, and common scientific instruments and equipment for research. The 46-foot research vessel *Salpa* is old, but should remain serviceable for inshore work for several years with adequate maintenance. The new laboratory will provide adequate laboratory space for faculty, graduate students, and visitors for several years. The National Science Foundation building will provide classroom space for some phases of the graduate teaching program, especially the proposed Summer Teaching Institute.

The Laboratory should continue to serve as a facilitating agency for extramurally sponsored research in the marine sciences. Additionally, however, certain intramural programs should be undertaken. The permanent staff of the Laboratory should maintain a reference collection of organisms and develop maps of their distribution and localities of abundance. Routine measures of certain environmental parameters, such as temperature and salinity, should be taken and the records made available to scientists undertaking specific research projects within the bay.

Kewalo Basin Branch Cooperative planning by the State Division of Fish and Game, the U.S. Bureau of Commercial Fisheries and the University of Hawaii envisions an Oceanographic Research Center on existing state land at Kewalo Basin to house research and locking facilities of all three agencies. Included in the planning of these facilities should be approximately 10,000 square feet of space to house a Kewalo Basin branch of the Hawaii Marine Laboratory in place of the space now existing at the Waikiki branch (in the Honolulu Aquarium) which could then be turned over to the Aquarium for its exclusive use. This space could be a part of the proposed laboratory of experimental biology (associated with the Pacific Biomedical Research Center), since the research carried on by both units, although different, would reinforce and complement each other's.

The Kewalo Basin branch would serve as a base for those biological studies requiring high seas field operations in the Environmental Research Program, and for most of the projects of the Fisheries Research Program, including the Cooperative Sport Fisheries Research Unit. Proximity of this laboratory to those of the Bureau of Commercial Fisheries and of the Division of Fish and Game, and proximity to the present center for sport and commercial fishing operations, has obvious advantages.

Land Study Bureau

Role

The Land Study Bureau was established by the Legislature in 1957 to develop land classifications for the state and to study land use problems particularly having to do with economic utilization. Its objective is to provide basic information on land use to branches and departments of the state government on which policy decisions regarding land use, economic development, and taxation can be formulated.

Present Status and Program Development

To implement this program, a staff competent in several pertinent disciplines (soil science, agronomy, geography, cartography, and economics) has been working jointly, starting with the soil survey data provided by the U.S. Soil Conservation Service and adding to these data information on economics, agricultural technology, crop suitability, land ownership and other salient aspects to produce detailed maps of land use classification.

Detailed land classification of Molokai and Oahu have been completed and published. Studies toward a land use classification for the Island of Hawaii are well under way. Interim generalized classifications have been published for all the major islands. It is expected that the initial task of preparing a detailed classification of all islands will be completed in 1970.

After the initial island-by-island classification is completed there will be need for continued updating of land data as economic and technological changes occur, for the development of special purpose classifications as needs arise and for continuing research in land economics as well as service to the agencies of the state government by providing factual information where needed.

After the major classification task is completed in 1970, a gradual reduction of staff is anticipated, unless increased demands for services of the Bureau develop during this period. No increase in operating funds is anticipated except in years when an island classification is published.

Pacific Biomedical Research Center

Role

As a normal outgrowth of the Health Research Institute, established to encourage and facilitate health related research of importance to Hawaii, the Pacific Biomedical Research Center was developed and given substantial financial support by the National Institutes of Health to become a major regional center of biomedical research for the entire Pacific Basin.

A biomedical research center in Hawaii is readily justified; since Hawaii enjoys several distinct advantages over mainland locations for investigations of this type. The ethnic and cultural patterns in Hawaii provide a natural laboratory for human genetics, epidemiology, and the comparative behavioral sciences; the accessibility of other Pacific communities from Hawaii extends these advantages still further. The rich marine fauna has hitherto been virtually unexploited for the elucidation of fundamental life processes through modern techniques of experimental biology, yet one of the most crucial problems in biomedical research is to find simple, elementary biological systems whose study can help us understand the more complex phenomena observed in higher forms of life. Conventional laboratory experimental animals such as rats, mice, dogs, and cats have been used to learn important new knowledge about normal and abnormal basic physiological processes in man, but these animals, themselves, are highly complex and present great obstacles to man's use of them experimentally. The wide variety and availability on Hawaii's reefs of simpler marine organisms whose basic biological systems are similar to those of the more complex high forms of life, almost certainly will prove far more useful and versatile as experimental animals. Herein lies the significant justification for the development of a seaside laboratory of experimental biology as part of the Pacific Biomedical Research Center.

The Center's role will be chiefly in fostering and facilitating research projects of biomedical interest. It will provide space, research equipment such as an electron microscope, and research facilities such as the animal colony, which would be difficult or impossible for researchers or departments to obtain on an individual basis. It will aid in activating research projects by the appointment or joint-appointment of scientists whose specialities augment those of existing faculty members. It will encourage interdisciplinary research by several different specialists on major biomedical problems and it will serve as a focal point for conducting joint graduate training programs for students whose projects are interdepartmental. It will provide facilities to newcomers and junior investigators whose research has not yet received support from granting agencies. It will provide a focus of research interest and collaboration for those biomedical research scientists in Hawaii who are working outside of the University. Finally, it will provide research space and facilities to visiting scientists who are interested in working on health problems of Hawaii and the Pacific, thus developing in an orderly fashion a truly international center for biomedical research in the Pacific Basin.

The Center was conceived prior to and independently of the proposed school of Basic Medical Sciences (p. 47) now under study, and will remain a separate but closely related administrative entity. The Center will complement and strengthen the proposed preclinical medical education program by contributing the research environment and facilities which are so essential for its development.

Organization

The Center would include two research facilities, one on the Manoa campus and the other at the proposed Kewalo Basin Oceanographic Center. It will maintain close liaison with the Hawaii Marine Laboratory, particularly its projected Kewalo Basin Branch, with departments of the University whose faculty and graduate student research extends into biomedical fields, with such new departments as may be associated with the proposed biomedical education program, and with those state, federal, and private agencies which are concerned with problems of public health and medicine.

Program Development

Four general principles guide the planned research development of the Center: (1) the Center will build upon the structure of the University as a whole, stimulating biomedically oriented research within the various departments of the colleges and research institutes; (2) during the first few years there will be a policy of "leading from strength," that is, emphasizing those programs which should become particularly productive because of the excellence and energy of existing investigators and the intrinsic advantages of the locale; (3) research emphasis will be on experimental rather than descriptive approaches to problems; (4) the Center will develop a broadly-based series of programs in medically-oriented biological and behavioral research ranging from basic investigations of individuals and their life processes at the molecular level to population studies in fields such as genetics and social psychology for elucidating both hereditable and environmental factors affecting public health.

Investigations at the Center will be encouraged in six broad areas: subcellular biology, microbiology, cell structure and function, regulatory biology, genetics, and behavioral sciences. A seventh, cutting across several of these sub-disciplines and of particular practical importance to public health, is epidemiology. Several investigations within these areas are now well underway. Many more investigations will be encouraged.

Staff Development and Operating Costs

Most research at the Center will continue to be supported heavily by funds from federal agencies. The salaries of a main "core" of researchers must be supported within the Center by state funds, but most professional personnel are budgeted within the several cooperating academic departments and other research agencies. Experience in other research agencies indicates that the level of state support need not be greater than about 15 to 20 per cent of the total budget. Federal and private funds will comprise the major portion of the budget.

Facilities

The present Life Sciences Building on the Manoa campus, constructed in 1962 with funds furnished jointly by the National Institutes of Health and the State of Hawaii, is already overcrowded, with the overflow extending to adjacent Spalding Hall. A new building is needed to accommodate research in biochemistry and biophysics, physiology, pharmacology, toxicology, and pathology. This new structure would leave adequate space in the present Life Sciences Building for the departments of Genetics, Public Health, and Microbiology and for common research facilities such as the electron microscope and an extensive animal colony which is needed in many experimental aspects of biomedical research.

The research space needed by the Center and the teaching space required if the master's program in the Basic Biomedical Sciences is authorized could be combined into one large building. A well-planned structure could integrate very efficiently the instructional and research facilities. Preliminary plans for this possible eventuality are now being drafted with the support of a Commonwealth Fund grant. Matching funds in support of a combined structure are available now from federal agencies.

The proposed Kewalo Basin facility will include research laboratories, a sea water system for maintaining living animals, and auxiliary service rooms. It is anticipated that the Center's needs ultimately will be met by about 30,000 square feet of space, the entire cost of which will be sought from a federal agency.

Social Science Research Institute

Role

The Social Science Research Institute was established by the University in 1959 to facilitate the overall development of social science research. The principal functions of the Institute are to facilitate initiation of individual faculty research and to develop and conduct programs in research, especially of an interdisciplinary nature. A growing recognition, both within and outside Hawaii, of the University's potential as an important cultural link between Asia and the United States makes it essential that we strive for leadership in the fields of Asian and Pacific research. Located as it is at the hub of the rapidly developing, socially emergent Pacific Basin community, and with increasing economic and inter-cultural ties with peoples of Asia and the Pacific, the SSRI, while mindful of its broader responsibilities to develop basic knowledge in the social sciences, now focuses its plans for research mainly on the Asian and Pacific areas.

Present Status

Formerly, the Institute had administrative responsibility for the pre-existing Psychological Research Center and the Romanzo Adams Social Research Laboratory. To more efficiently utilize the minimal resources for research in the social sciences, the Institute consolidated and incorporated these units during the 1963–64 academic year.

Program Development

In the spring of 1963, the Institute submitted a proposal to a private foundation for extensive support of a broad social science research program on "Social Movements in Asia and the Pacific." The proposal embodies an interdisciplinary approach to the problems of change in contemporary Asia and the Pacific, and includes a concern with the nature of migratory movements of peoples in terms of motivation, impact, and assimilation; the changing values, institutions, and personality structure; and the nature and direction of political, social, and economic trends. Funds from this grant, if they are obtained, will be supplemented by state funds to develop social science research projects with an Asian and Pacific focus to a sufficient degree of excellence that they may attract much larger amounts of extramural support.

As is the policy with other research institutes, appointments to the SSRI staff will generally be split appointments with academic departments, thus strengthening both instruction and research in the social sciences. Statistical and clerical staff will be supported through the Institute to facilitate research projects of the academic faculty. A total of about ten professional level positions within the Institute will be required by 1970.

It is difficult to determine the position of the Institute even five years hence as so much will depend on the quality of output, the extent of state and extramural support, and our ability to attract scholars of high performance in the immediate future. The Social Movements grant will enable a number of specific research projects to develop to a point where we should begin (1) to exploit the excellent research funding opportunities provided by the National Science Foundation and the National Institute of Mental Health; (2) to propose specialized projects to other funding agencies for the social sciences such as the Carnegie Corporation, the Social Science Research Council, the Human Ecology Fund, the Rockefeller Foundation, Resources for the Future, and others; and (3) to submit a major request for support through a foundation of a research and training grant in the social sciences with a focus on Asia and the Pacific.

While there is considerable favorable sentiment among the various funding agencies toward Hawaii and its development as a link to Asia, support for programs is contingent on the clarity and vision of research proposals submitted as well as on the adequacy of our facilities and staff and, finally, on the extent of our institutional commitment to such programs. Our developing Graduate Research Library on modern Asia, the development of graduate curriculums in linguistics and in the Asian and Pacific languages, and above all the strengthening of graduate study generally in the social sciences, will contribute materially to the attraction of scholars to the University.

Statistical and Computer Center

Role

A combination of the widespread intensification of research and concomitant information explosion in the sciences, social sciences, business and many other fields, coupled with the simultaneous development of highly sophisticated electronic data processing and computational machines, has revolutionized information handling and calculation. Researchers may now attack problems with limits imposed only by brainpower, being freed from limitations of computational time.

The Center was established to provide services with respect to statistical consultation, systems design, data processing, computing and instruction to all divisions and departments of the University, as well as to officially affiliated, non-profit, scientific research institutions. All faculty needs for data processing and computation are met equally, regardless of whether or not faculty members have special funds to defray costs of the Center's operation.

Present Status

An IBM 7040-1401 system which allows expansion of capacity by field conversion of units and auxiliary attachments is in operation in new quarters located in the Hawaii Institute of Geophysics. An IBM 650 with peripheral equipment is located in Keller Hall. The latter will be used by the College of Engineering and by students learning statistical and computer techniques and operation.

The primary 7040–1401 system is expected to be adequate for the University's needs until 1969. Present demands for computer time will saturate a full shift during 1963–64. Two shifts will be required during 1964–65, and by 1966–67 three shifts or complete saturation are anticipated.

Formal educational programs involving the use of the IBM 7040–1401 system are being planned during 1963–64 for implementation in 1964–65.

An amortization plan for the purchase and operation of the IBM 7040–1401 system, towards which a total of $350,000 was approved for a grant by the National Science Foundation, will require an annual budget of approximately $155,000 from the state through 1967–68, after which date the capital costs will have been defrayed, and the annual state support will drop to approximately $100,000 annually. Total annual operating costs will exceed the state budgeted level, but the balance will be provided through fees for computer use. Accumulated funds from computer fees are intended not only to defray part of the operating costs, but to permit the purchase or lease of additional equipment to maintain the system at its most modern and efficient design.

Program and Facility Developments

Anticipated additional equipment includes a Direct Data Connection in 1964. This will allow computer service to remote centers (e.g., campus laboratories, Haleakala Observatory, etc.), via direct line, telegram, teletype, and telemetering. Four additional, faster tape drives will also be acquired in 1964. Random access files to meet demands for increased storage capacity will be required by 1966, and additional data channels will also be necessary. Additional on-line equipment will be required within the first five years of operation.

When the third shift has reached maximum utilization, probably by 1971, the field conversion of the 7040 to the 7044 must be made, a conversion that will approximately double the system's capacity. By 1974, the 1401 will have to be supplemented by an IBM 1410 for increased capacity. An approximate time table and cost figures (based on 1963 rates) are included in Appendix Table 16.

The trend toward intensified education in computer use is evident among universities. The newness of the technique and the rapid evolution of machines have worked against the development of standard curriculums to date at any educational level. However, several of the larger universities have recently established departments of computer science with curriculums leading to graduate degrees, covering such fields as numerical analysis, operations research, symbolic logic, mathematical models, as well as management and programming of information systems.

No prediction can be made at this time about the establishment locally of a department of computer science, but an increasing number of courses in computer techniques and programming will be offered in many departmental curriculums, as well as a variety of programming and systems courses prepared and given by the staff of the Center. Some of these courses will be offered through the College of General Studies to bring the fundamentals of computer science and techniques to interested persons in the community.

A program of on-the-job training in computer operations for University students has been initiated to insure maintaining an adequate staff for the Center in a highly competitive job market. Recruitment of computer personnel will be difficult for the University in the years immediately ahead, because of high salaries paid by industry, but the problem can be solved in large measure by the appointment to the Center of graduate assistants and student helpers.

Water Resources Research Center

Role

The economic growth of Hawaii requires continual modification and expansion of water development. Problems of locating, analyzing, and conserving water supplies arise continually. Conditions unique to Hawaii make local research essential. Although existing governmental and private organizations monitor water supplies and conduct applied research, there is an inadequate base of fundamental knowledge.

Water resources research is inherently multi-disciplinary. It involves hydrology and hydraulic engineering, geology, geophysics and geochemistry, microbiology, sanitary engineering and public health, climatology and soil physics, agricultural engineering and forestry. In most of these fields the University already has competent staff members, but with few exceptions their interests have hitherto been channdled in ways unrelated to water resources research.

Organization

Based on an intensive study of needs, present efforts, capabilities and means for support, the creation of a Water Resources Research Center at the University of Hawaii has been recommended. The functions of the Center should be: (1) to plan and initiate water resources research projects; (2) to coordinate water resources research efforts among various units of the University; (3) to represent the University on water resources research matters at all levels; (4) to promote and arrange interdisciplinary and instructional programs and research opportunities for hydro-scientists affiliated with various instructional departments of the University; and (5) to administer grants and contracts arranged by/or assigned to the Center.

The Center should have a minimum administrative and clerical staff, and should draw its research staff from the Institute of Geophysics, Engineering Experiment Station, and the several related instructional departments.

Program Development

Pending federal legislation for the support of Water Resources Research centers at all land-grant colleges will permit, if passed, an early establishment of such a Center at the University. However, the substantial needs in Hawaii for the kind of coordinated research that such a Center could provide are so important to the economy of the state that establishment of the Center with minimum staff should be planned not later than 1964 regardless of the outcome of federal action. It is expected that most of the research support for the Center would come from extramural grants and contracts.

Pacific Lexicography Center

Role

Instruction and research in linguistics at the University of Hawaii will be strongly emphasized in the years ahead. Research in this field is expected to be focused on: (1) the preparation of dictionaries for languages of Asian and the Pacific Basin peoples; (2) studies of the pre-history and migrations of these peoples; and (3) theoretical advances in structural semantics required for machine translation. A natural development for these objectives, especially at the University of Hawaii where numerous Asian and Pacific languages are in living use, is a lexicography center where such research programs can be developed, financed, and conducted. The Center would augment the instructional aspects of the Department of Linguistics and the Department of Asian and Pacific Languages, and be of first rank importance in support of the extensive programs of the English Language Institute and the teaching of English as a second language.

Program Development

That the University is an ideal location for such a Center is already evident. Several members of the new Department of Linguistics and the Department of Asian and Pacific Languages, as well as several senior scholars in the East-West Center Institute for Advanced Projects, are engaged in lexicographical research. Work is underway at present on an Indonesian Dictionary. Many additional languages needing such materials are used by native speakers in Hawaii, and those not so represented locally are easily available from Hawaii's central location in the Pacific Basin.

Funds for the development of a Pacific Lexicography Center are almost certainly available from private foundations and the federal Office of Education. Pump priming by state funds will doubtless be required, but the yield in extramural support should be high.

LIBRARIES

Role

An indispensable element in any university is its library, second in importance only to its body of scholars. Universities began as centers for discussion and have become in recent times centers for experimentation as well. Their libraries were founded to store and make available the results of the discussion and experimentation. Inexorably, human progress involves a staggering amount of repetition. Without the libraries in which scholars can find an orderly accumulation of results of past studies, much scholarly activity today would consist of unrewarding retreading of paths opened centuries ago.

The following paragraph from the Academic Master Plan for the University of California campus at Riverside is highly pertinent:

> No other activity on any campus is as critically affected by the problems of expanding a campus of limited function to a General Campus as is the University Library. The problems are not those simply of expanding holdings to meet the instructional needs of additional undergraduate students, but of new services to support graduate research and instruction, plus the increasing research requests as the faculty grows. To all of the faculty, the library is vital. To the social scientist and the humanist this single facility is the equivalent of what the laboratory is to the scientist.

Specifically, the role of a university library is threefold. First, it must receive and store information; second, it must sort and catalog this information; and third, it must make the information readily available to students and faculty.

Traditionally, the information to be stored is received in the form of books including periodicals. Older than these and still of importance in specialized areas are manuscripts. Maps and charts form important holdings, and in a library with interests in Asia, Oriental scrolls and similar materials are commonly acquired and stored. More recently, photographic records, including motion pictures, microfilm and its variants as well as magnetic tapes have become efficient media for the storage of information of specialized sorts. The university library must be sufficiently versatile to handle all these media.

The usefulness of a library collection depends greatly on its efficient organization and cataloguing. Since contributions to human knowledge do not come in standardized units packaged to conform to recognized compartments, the cataloguing operation involves highly professional skills. Moreover, although most of the retrieval of sources is handled by the library users themselves with a modicum of assistance and control from the library staff, professional reference librarians are required for teaching the uses of information sources and for specialized reference tasks that often involve research of considerable complexity.

Present Operations

Organization The libraries of the University of Hawaii include the main library, housed in the Sinclair Library building, and a few much smaller library units, such as those of the Legislative Reference Bureau and the Industrial Relations Center.

The ten departments of the main library are organized according to subject and function and serve under the administration of the University Librarian who in turn reports to the Vice-President for Academic Affairs. A faculty library committee advises the University Librarian. Approximately half of the library's operations and staff are concerned with acquiring and organizing books and other library materials, and the other half provide direct or indirect service to its users.

Because libraries are largely judged on the nature and extent of their collections, basic inventory and circulation statistics for the University Library for the year 1962–63 are presented below:

Inventory	
Total number of bound volumes	389,431
Total number of unbound pamphlets and serial parts	948,597
Total number of microfilm reels	16,766
Total number of microcard and microprint cards	124,740
Total number of maps (including duplicates)	37,831
Number of current periodical subscriptions	2,395
Circulation	
General circulation	268,324
Reserve book circulation	91,039
Total circulation, 1962–63	359,363

The measure of utilization of the reference services of the Library is less easily expressed. However, both the general reference service and that of the Hawaiian and Pacific Collection receive wide commendation from both students and faculty.

Perhaps not widely known is the role played by the University Library as a resource serving not only the University community but that of the entire state. Registered off-campus borrowers number about 4,000. Close cooperation with other libraries, the Library of Hawaii and such specialized libraries as those of the B.P. Bishop Museum, the Pineapple Research Institute, the Experiment Station of the Hawaiian Sugar Planters Association, the East-West Center's Institute of Advanced Projects Research Collections, and the U.S. Fish and Wildlife Service's Honolulu Biological Laboratory make the service of the University Library extremely valuable to the wider community. A Union list of serials is maintained, for example, so that the several libraries may have access to specialized periodicals without undue duplication of subscriptions.

Adequacy of the Sinclair Library

The Sinclair Library building in which the main library is housed was completed in 1956. Approximately 87,000 square feet of usable space is devoted to library purposes. Designed well for a student body of some 6,000, the Sinclair Library is an excellent building for many library purposes and served very well up to about 1960, when the demands of undergraduate and graduate students and an increasingly scholarly faculty simply overran its ability to serve a major and still rapidly growing university.

The figures for staff, space, books, and usage represent enormous increases over those that would have been quoted a decade ago. Yet there are legitimate complaints of inadequacy from both the library staff and the library users. A large backlog of uncatalogued books increases daily. A year or more frequently elapses from the date of request for the acquisition of a book to the time when it is ready for use. The binding of periodicals is years behind. The space for library study is hopelessly inadequate.

Describing these inadequacies quantitatively is not a simple matter. University libraries are highly adapted to the character of the institutions. They are as large and as good as their planners and their sponsors together want them to be and there are very few accepted norms and standards for comparative evaluations. For the purpose of demonstrating the comparative standing of the University of Hawaii Library, however, library statistics for this University are listed in Appendix Table 17, together with means and medians for the 12 state-supported universities with enrollments nearest those of the University of Hawaii in 1961–62, the last year for which comparative statistics are available.

Although enrollment at the University of Hawaii was in that year almost exactly equal to the median of the enrollments of the other universities listed, its library had a collection of books not only smaller than that of any other, but the University's collection was less than half that of the median size. Consequently, the number of books per student in Hawaii was less than half the median figure for students in comparable universities (Fig. 7). These unfavorable comparisons for Hawaii do not mean that the University has been derelict in its development of a suitable library. Libraries require time to develop, even if unlimited funds are available. The University of Hawaii is the youngest of the 12 comparable universities listed, and cannot be expected to show cumulative development, for example, matching that of the University of North Carolina, which was founded in 1795. However, the geographic isolation of the University of Hawaii impedes interlibrary loans and slows the procurement of microfilm as compared with mainland universities and thus requires a larger and more complete collection than would be needed at mainland universities. The inadequacy of the present library collection makes essential a sufficiently high rate of acquisition to increase the relative size of the collection as well as to keep abreast of the expanding needs.

According to the American Library Association,[8] "It should be considered a serious danger signal by the college authorities if the library budget sinks appreciably below the median ratio of library expenditures to

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[8] *American Library Association Standards for College Libraries* (R.R. Bowker, New York, 1959), p. 88.

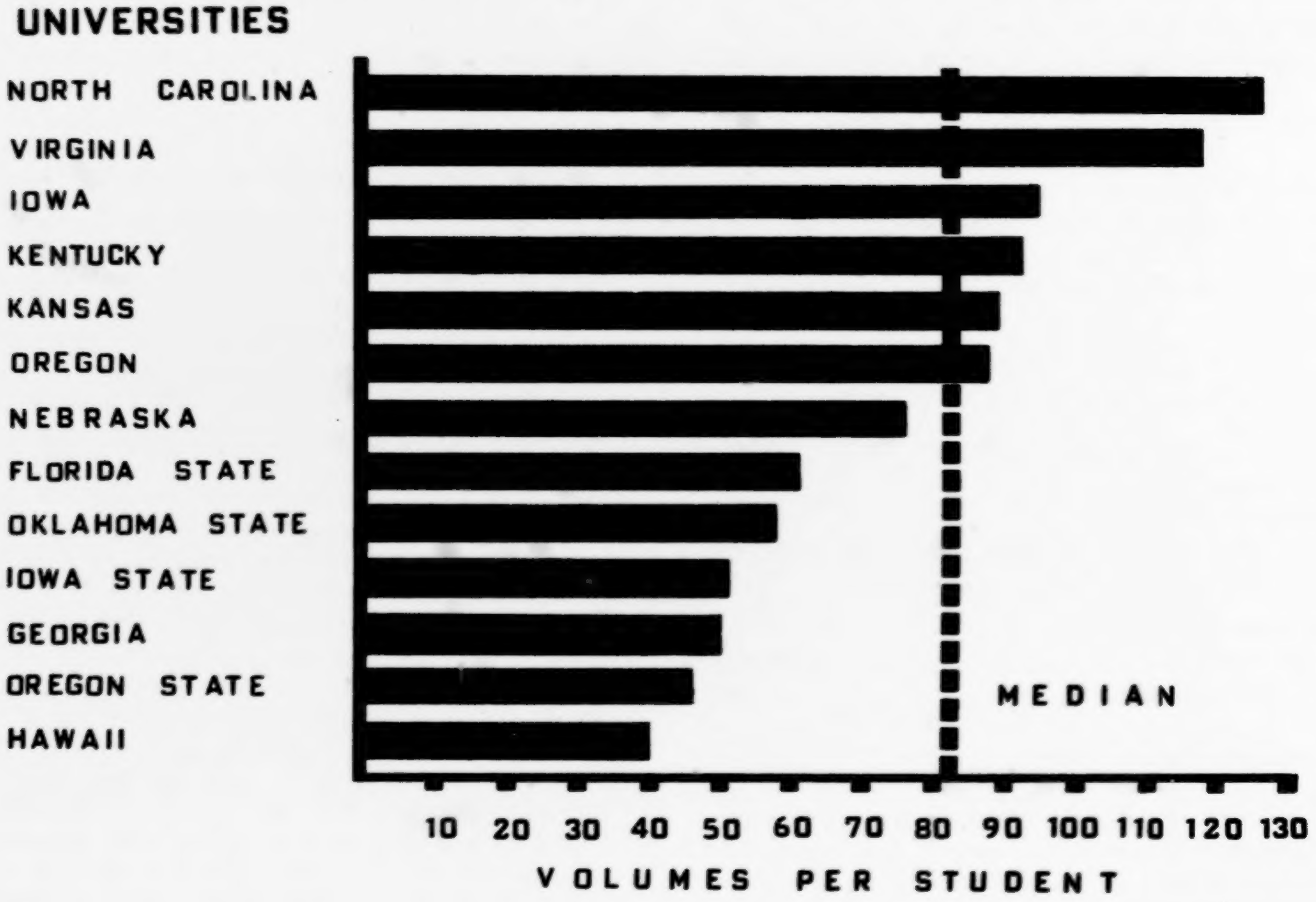

FIGURE 7

BOOK - STUDENT RATIOS OF SIMILAR STATE UNIVERSITIES

total educational and general institutional expenditures for comparable institutions as indicated in the latest annual college library statistics." Although a one year, nonrecurring allotment from the East-West Center in 1962–63 increased the index levels above the medians shown for comparable university libraries, the improvement was short-lived. In all other years the book acquisition rate and the total operating expenditure were well below the median in relation to enrollment. The rate of acquisition of periodicals has continued much lower than that at any of the comparable university libraries. This deficiency is extremely serious in view of the University's rapid development of research and graduate study.

Although the University of Hawaii library staff was increased substantially in 1962–63, it was still far short of the median size in the comparable university libraries. Close attention must be given to the development of the professional staff of the library in relation to the kind of development needed to improve services.

The Sinclair Library building was designed in 1951 to provide for a total student body of less than 6,000. The number of daytime students on campus now exceeds 12,000, and registered off-campus borrowers bring the number of users to approximately 16,000. Stack space will be exhausted in 1965–66, reader space is 60 per cent below recommended standards, and staff space is rapidly becoming inadequate. Emergency space additions will have to be arranged to allow present operations to continue until the Graduate Research Library opens.

Library Improvement

Graduate Research Library Although additional space requirements are really a consequence of academic developments which directly involve improvements to the University's library system, such needs are given prior consideration in this account, because space needs influence the planning for the other aspects of a total library system. Following recommendations of an experienced library planner,[9] a new Graduate Research Library building is in prospect, which will eventually have a capacity of about 1,285,000 volumes, 1,575 reader stations and a staff of 200. It is intended to take care of the University's library needs to about 1985. Into this building will go all collections of greatest use in graduate instruction and in research, leaving the Sinclair Library building to be converted to a library especially for undergraduate use. By separating the graduate and undergraduate libraries, it is believed that adequate service can be provided with a smaller staff and with less duplication of materials that would be required with any other organizational system.

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[9] D. C. Weber, *Building Program for the Graduate Research Library* (Honolulu, 1962).

Because funds for the construction of the entire Graduate Research Library building probably cannot be obtained at one time, plans are being drawn for construction in two phases; the first phase will actually be somewhat smaller in area than the Sinclair Library. Construction is scheduled to begin in 1964 and to be completed early in 1966. Into this new building will be moved the natural sciences collections and most of the technical staff, leaving behind until the second phase can be completed collections of the social sciences and humanities. Staff additions will be required starting in 1964 to prepare the collection to be shifted to the new building. For the most appropriate and efficient operation, preliminary planning of the second phase should commence not later than 1965, in an effort to complete the total structure by 1969.

Conversion to Library of Congress Classification Until 1963 the collections of the Library had been classified according to the Dewey decimal scheme, devised in 1875. Most large state university libraries have shifted their classification systems to the more modern system devised by the Library of Congress. For greater efficiency and eventual lowering of costs, a decision has been made to classify all new acquisitions in accordance with the Library of Congress system.

However, as long as books remain under the Dewey decimal system, they must be shelved in an area separate from those under the Library of Congress system, thus separating books on the same subject. This creates a cumbersome situation which must be corrected as rapidly as possible. The costs involved in reclassifying present collections are estimated at a minimum of $500,000. There is some likelihood of private foundation support to defray part of these costs, but a substantial share will have to be borne by the state. A period of five years should be adequate to complete the task, thus requiring an average of approximately $100,000 annually. The shift to the Library of Congress system has stopped the compounding of the problem; the task of reclassification must be undertaken at once.

The Binding Backlog A large part of the University's periodical collection is kept unbound in the basement of the Sinclair Library where it is not directly accessible. An intensive program to bind, catalog, and shelve these periodicals properly should be initiated promptly. Of the nearly one million unbound pamphlets and serial parts inventoried, about 300,000 are government documents. The remaining serial parts are estimated to be equivalent to 60,000 volumes. The cost of binding these, excluding staff and supplies, is estimated to total $225,000. A five year goal to reduce this binding backlog is strongly recommended. Aside from normal annual binding costs, an additional $45,000 each year should be appropriated to bind existing periodicals.

Approaching the Median Status Earlier in this section it was pointed out that the University Library has a smaller collection relative to student enrollment than any comparable university, yet the need here is greater because of Hawaii's isolation. The direct solution to this problem is to step up the continuing rate of acquisition at a level adequate to keep abreast of the rapidly expanding needs, and to plan for a supplementary rate of acquisition calculated to erase the present deficiencies in the collection over a reasonable period of time. How and to what extent should this be done?

The median index of volumes per student in comparable mainland universities is 82 and the mean is 79 (Appendix Table 17). Using these indices in relation to the 1962 fall enrollment, the University Library should have had between 895,000 and 929,000 volumes in its collection by the summer of 1963. Actually, there were about 440,000 volumes plus an estimated 60,000 volumes in the backlog of periodicals awaiting binding, for a total collection of 500,000.

Mechanization of Operations Present library operating procedures for the increased work load anticipated for the Library in the years immediately ahead are wholly inadequate. Modern methods of mechanization are being investigated and will be established as feasible. The first step in this mechanization process will be started in 1964–65, and will involve a new circulation system using IBM sorting and computing equipment. To establish machine control will require about $10,000 per year for machine rental and supplies. The new system will eliminate most of the current filing and record keeping routines, will lower service unit costs, yet concurrently will provide faster, more accurate service.

Projected expansion of machine record handling will eventually involve the serials, ordering, and cataloguing departments. For all operations machine processing will result in increased operational efficiency, and in the ordering department it is expected that costs may be reduced substantially.

External Collections Several library units not affiliated with the main library are authorized or recognized on the Manoa campus. These are:

Industrial Relations Center Library
Legislative Reference Bureau Library
Economic Research Center Library
John Beaumont Orchid Research Library
Carleton Green Collection
Florence Pen Nutrition Library

All these are small collections, usually without professional librarians in charge. However, for those in which some type of control over circulation exists, an inventory of the collections should be made and their contents recorded in the catalog of the main University Library.

Hawaiian and Pacific Collections The Library has attempted to develop outstanding collections for Hawaiian and Pacific studies. Its Hawaiian resources are, naturally, the most extensive in the world, and as the University's importance as a center for Pacific Studies increases more emphasis is being placed on the acquisition of Pacific Basin materials. Manuscripts and documents in these localities are often best acquired on microfilm. Oral materials for linguistic and other studies may best be recorded and stored on magnetic tape. A University Library field-filming operation should be in progress by 1966 to do original microfilming in island areas where cameras are not available and from which materials cannot be moved. Costs of the program would be small, and the possibility of recouping original costs is good, because other libraries will purchase copies of materials obtained.

Academic Status of Librarians "Professional librarians should have faculty status, with the benefits enjoyed by the teaching staff. These should include such items as tenure, sick leave, liberal vacation, and adequate retirement plan and sabbaticals. The salary schedule for librarians should be the same as for teaching members of the faculty."[10]

The quotation above aptly states a policy which the University Library must follow if the rise in quality of the Library is to keep pace with the remainder of the growing University. Except for the chief librarian and a few librarians now placed in the Specialist classification of Board of Regents appointees, the professional librarians are employed through regular state Civil Service. The Specialists category is limited to reference librarians and to curators of special collections whose duties also include some instruction. The University Library has had for sometime great difficulty in recruiting and retaining sufficient numbers of adequately trained professional librarians under present Civil Service regulations. As in most professional fields, there is an acute shortage of trained librarians at any level of competence. To ameliorate this extremely serious situation the problem should be explored with the State Director of Personnel in an effort to secure faculty status for all professional librarians at the University of Hawaii and to place them on the regular faculty salary scale.

Budgeting for Improvements

The American Library Association makes the following recommendation concerning college library budgeting:[11]

> The Library budget should be determined in relation to the total budget of the institution for education and general purposes. The program of library service outlined in these standards will normally require a minimum of five per cent of the total educational and general budget. The percentage must be higher if the library's buildings are seriously deficient, if there is rapid expansion of the student population or course offerings, or if the institution fosters a wide range of studies at the master's level or program of independent study.

Despite the recommendation of a minimum 5 per cent for the library of the total educational and general budget, only two universities of the several for which figures are available (Appendix Table 18) exceed this ratio, and the mean is 3.3 per cent, the median 3.0 per cent. In 1962–63 the ratio for the University of Hawaii was 2.8 per cent. Library expenditure ratios for the University from 1958–59 to 1962–63 are detailed in Appendix Table 19.

Computation of the library's budget on the basis of the total educational and general budget is sound. Instructional and research budgets are certainly related rather directly to the library's collections and services. Extension service, general administration, and operation and maintenance of the physical plant have comparatively little direct relationship to the library work load. However, data on the relation between library expenditures and only the instructional and research expenditures at universities are not available for comparative evaluation. Consequently, the total educational and general budget must form the basis for computation. Ordinarily, a close relationship between total expenditures of a university and the expenditures for instruction and research would be expected. Should such a ratio vary widely between institutions, it may represent a measure of the depth and quality of a university's academic program which should in turn be reflected in the library budget.

Considering the effects of distance and time of the University of Hawaii from other universities and the resulting impedance and vexing delays of inter-library loans, it appears reasonable to recommend that the basic expenditure ratio for the University Library be not less than the 3 per cent level shown to be the median for comparable universities.

To the 3 per cent of the total University budget which should represent an approximate annual basic allotment, the total annual library budget over the next five years should also include a supplementary amount to reduce the deficiency in collections ($200,000 annually for 10 years), to reduce the backlog of binding of periodicals ($45,000 annually), and to convert present collections from the Dewey decimal system to the Library of Congress system ($100,000 annually). Thus, approximately $345,000 should be added to the normal annual budget over each of the next five years. After this period, for the five years following, a supplemental allotment of $200,000 annually should be provided to permit University Library to reach the median of comparable universities.

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[10] *American Library Association Standards for College Libraries* (R. R. Bowker, New York, 1959), p. 89.

[11] *Ibid.*, p. 88.

COMMUNICATIONS CENTER

Role

The Communications Center was established in 1962, incorporating the pre-existing Audio-Visual Center. The Center exists as a service arm through which the facilities of audio-visual apparatus, graphics, television, and to some extent radio production, are available to the staff of the University. The Center provides a central pool of information and materials to which the faculty may turn to supplement the usual instructional techniques with mechanical and electronic devices.

Present Status

Audio-Visual Services The Communications Center now offers a variety of audio-visual and graphics services including projectors of various kinds, tape recorders, record players, portable public address systems as well as films, filmstrips, recordings, tapes, charts and various types of display mechanisms. Within its budget limitations the Center offers consultative services for faculty members desirous of using audio-visual facilities. Films, slides, and other instructional materials are procured; their classroom use is planned; and advice is provided for planning physical modification of classrooms (lighting, acoustics) to make best use of the teaching aids.

The Center conducts the showing of visual aids and services the equipment and materials required. By way of example, the Economics Department is now using TV films in its introductory course. The Department selects the films; the Center orders them, arranges for their receipt and return and their projection in class.

The demand for audio-visual services is adequate testimony of the Center's usefulness to the academic program; from 933 work orders in 1959–60 to 3,930 in 1962–63.

Graphics Frequently, suitable visual materials are not commercially available for a given classroom need. The Center creates them at the request of the academic department being served. These "graphics" include films for moving picture or TV use, slides, pictures, posters, charts, projectiles, stencils, laminations, signs, conference displays, etc. A sizable portion of the graphics produced by the Communications Center have been used by the University administration for public presentations of the University's activities.

Radio Since the cessation of University broadcasts over its FM station KUOH in 1959, when its FCC radio license lapsed, the University has had no broadcasting activity. However, in recent months the Center has helped design and execute an instructional program in educational radio for Asian educators in the Institute for Technical Interchange of the East-West Center, it participated in a pilot media institute conducted for public school personnel and others in June 1963, and has conferred with faculty members, particularly in the Speech Department, as to the use of radio in instructional and public service programs.

Preliminary plans for the relicensing of the University's radio station have been prepared by the Center. To put the station back in operation would require the relocation and reconstruction of the studio facilities, now in Hawaii Hall, the purchase and installation of additional and replacement broadcasting equipment and the development of radio programs for distribution to local stations. A broader base for bringing the University's activities to the public via radio than was previously extant is needed. Properly organized and prepared radio programs are a long proven educational device. The University must accept a greater obligation in this area than has hitherto been shown.

Television The Center has carried out several programs and has developed wide-ranging plans for both closed-circuit and broadcast television. Earlier this year it installed a closed-circuit, multi-screen facility in the auditorium in Spalding Hall. This installation, designed to alleviate the problem of seeing demonstration materials at the podium from the farther reaches of a large lecture hall, has been quite successful. Moreover, the installation has served well as a demonstration center for large classroom uses of TV.

Through a grant from the National Science Foundation, personnel of the Center planned and produced (through the video tape recording facilities of commercial TV station KHVH) a television credit course for high school teachers entitled "Earth Sciences," which consisted of 52 half-hour lessons taught by nine University faculty members. Also produced during the past year was a kinescope film report for the East-West Center, summarizing a three-month pilot project in educational media training.

In June 1962, at the request of the Board of Regents and the State Department of Education, the Governor requested the University to apply for Channel 11 under an FCC license to establish an educational television facility in the state. In accordance with this directive, plans for a state-wide educational TV network were formulated by the Center and application was made to the FCC as well as for federal grants to aid in the construction of the station. Plans were also submitted for the use of closed-circuit TV on the Manoa campus, hooking up the units on both sides of University Avenue, including the central East-West Center buildings. The project failed to receive sufficient support.

Program Development

During 1963–64 the Center has been operating under a drastically reduced budget because of the complications in budgeting procedures which developed when the regular budget of the Communications Center was merged with the state-wide educational TV program. Lack of an appropriation for the entire program virtually brought the work of the Center to a halt and has reduced its budgeted services to the academic program of the University to almost nothing. Consequently, it has been able to respond to very few requests for audio-visual and other services requiring materials or manpower not available from the regular staff and the existing film library. With its present facilities and staff the Center can comply with only about half the requests for its services.

Near disastrous situations are not always devoid of "austere" blessings. The complete inadequacy of funds for 1963–64 has necessitated emergency measures and the attainment of efficiency within the limits of the operations and expenditures. An improved system for critical review of materials to be purchased has been developed and will be used henceforth. Funds allotted to the Center for the purchase of audio-visual materials and preparation of graphics will be allocated to units of the University to be used in a manner similar to that employed by the University Library for acquisition of books. Within the limits of allocations made to academic units faculty members will be made responsible, after critical review, for selecting materials to be ordered. Actual business transactions, cataloguing and servicing will be the responsibility of the Center.

Television on campus should for the next few years be used experimentally to determine its special advantages and limitations as a teaching device. The Center should give priority in its TV work to completing its basic facilities for closed-circuit programming on campus and in establishing, in conjunction with the several colleges, experiments controlled as rigorously as possible to test how television can improve the educational process or use more effectively the physical plant in view of the great growth in enrollment. The results of such experiments would provide the most dependable guide for the further expansion of this promising, but still only partly tested, medium of communication and instruction.

UNIVERSITY OF HAWAII PRESS

Role

The basic function of the University of Hawaii Press is to publish scholarly works of high quality, many of which have a sales potential too limited for acceptance by commercial presses. The output of a university press contributes importantly to the reputation of the sponsoring institution. Among the significant values which accrue from publishing scholarly works of merit are the attraction of outstanding new faculty members through "academic advertising" of the quality of the resident faculty, assurance to faculty members of the University's concern for the wide dissemination of their creative scholarly efforts, and the establishment of a standard of excellence for the institution which is significant in many subtle ways for securing extramural funds.

Present Status

Since its establishment in 1947, the Press has published over 50 books and two quarterly journals, *Pacific Science* and *Philosophy East and West*. Three of the books have been included among the nation's "Fifty Books," selected annually from the output of the many university presses, a distinct honor for such a modest Press.

Close relationship between the University of Hawaii Press and the Bishop Museum Press is maintained, as it also is with the scholarly publication program of the Honolulu Academy of Arts. One volume has been published jointly with the new East-West Center Press, but precise relationships between these presses are yet to be defined.

Aside from staff salaries the costs of printing (totaling about $80,000 in 1962–63) are defrayed about one-half from general appropriations, the remainder from local and mainland private sources. The lack of a revolving fund for printing is a serious handicap to the Press at present.

The entire production of the Press is accomplished by only two editors and minimum clerical assistance. Average production thus far maintained of about five books a year is nearly double the standard set for an editor by the Association of American Presses. While such high productivity is obviously commendable, a substantial backlog of manuscripts still awaits attention, demonstrating clearly that the Press is presently undermanned.

Program Development

Staffing Unquestionably, the number of manuscripts will mount rapidly as both the scholarly quality and numbers of faculty increase in the years ahead. Greater emphasis on graduate instruction and research will swell scholarly production in all fields. The staff of the Press should be increased in proper ratio to its rate of production. The economic goal of the Press, to reach a volume of publication sufficiently high so that sales proceeds will more nearly offset production costs, can only be achieved through proper staffing ratios.

The principal staff members of the Press are classified within the state Civil Service system. Difficulties have been continuously encountered in recruiting experienced editors qualified to work with scholarly materials. This is partly because there is only limited opportunity in Hawaii for persons to obtain scholarly publishing experience. On-the-job training in this field is expensive and burdensome. Because of the scholarly skills and experience required for such posts, it is highly desirable to place editorial positions under the Board of Regents' classification so that recruitment of the most highly qualified persons may be carried out on the mainland as well as in Hawaii.

Revolving Fund With very few exceptions, other university presses are permitted to retain sales proceeds of books published in a special revolving fund. The fund is used to cover the costs of printing new books, and serves as an excellent incentive for the staff to produce readily marketable publications which, in turn, promotes efficiency and higher quality of work, thus bringing closer the attainment of self-support.

Proceeds from a revolving fund permit the kind of flexible operation required to conduct properly the business of a press. Successful books can be reprinted, for example, before the demand for them falls off, or extensive advertising and promotion of books may be undertaken when the market potential looks promising. It is strongly recommended that a revolving fund be established and that every effort be made to make sales more nearly offset costs to relieve the necessity for extensive financing through general appropriations.

OFFICE OF STUDENT PERSONNEL

Role

The Office of Student Personnel organizes programs and provides services which contribute to the student's well-rounded development — physically, socially, and emotionally as well as intellectually. Aside from providing specific services of a non-academic nature, it attempts to integrate all services and activities which are traditionally a part of higher education. Functionally, the staff attempts to work with students in achieving intelligent and informed self-direction rather than making decisions for them. Although the staff provides special services for persons with severe chronic physical or emotional problems, its primary concern is working with the average, normal college student. Rather than replace instructional faculty in their relations with students, the Office of Student Personnel endeavors to enrich and supplement their efforts.

Present Status

The Office is organized into nine major divisions. Although each division has specialized functions and purposes, all operate in an integrated and cooperative fashion under the direction of the Dean of Student Personnel.

Counseling and Testing Center The Counseling and Testing Center is primarily responsible for educational, vocational, and personal counseling of college students on an individual basis. The service of professional counselors is augmented at present by one counseling psychiatrist. The Center conducts varied testing programs both on a group and individual basis, including many national testing programs used by professional and graduate schools in the selection of students. Other responsibilities of the Center include the coordination of a reading improvement program, maintenance of an educational and vocational information library, consultative services to faculty in the areas of student mental health and academic advisement and limited counseling services to the community on a nominal-fee basis. The Center also works closely with the departments of Psychology and of Educational Psychology to provide practical experiences for graduate students in these departments whose interests lie in counseling. The Center is also involved in conducting its own research in such diverse topics as educational vocational plans of university and high school students, validation of admissions and readmission criteria as well as studies of factors involved in student success in special new experimental instructional programs.

Foreign Student Advisor The foreign student advisement program fulfills the many complex advisory and administrative functions necessary when large numbers of foreign students are enrolled. Among the many activities through which this office assists foreign students are the following: providing advisory services, developing orientation programs for incoming students, administering the registration of foreign students in cooperation with the Office of Admissions and Records and the various colleges, coordinating community programs for foreign students and serving as a referral agency when such students are in need of assistance not directly available elsewhere.

Bureau of Student Activities The Bureau of Student Activities is responsible for the coordination of all non-athletic student activities and clubs. In addition, it coordinates the program of the Hemenway Union, which the Office of Student Personnel views as involving the total college community—students, faculty, administrators, and citizens—in a very active way. In addition to general responsibility for the student activities program, the Bureau assists student organizations in financial matters, provides a banking service for clubs and committees, maintains official records of all student activities and organizations, and operates a speakers' bureau. The Bureau works closely with members of the faculty and relies heavily upon their advisory help in the development of many student activities programs, particularly those related to academic interests.

Office of Admissions and Records The Office of Admissions and Records handles all correspondence addressed to the University by prospective students and their parents and provides information about the University and its various programs; it implements admissions policies and admits students into the University and is vested with the maintenance of academic records of all students in the University. The Office is responsible for the preparation of course schedules, assignment of classrooms and for the conduct of registration for the fall and spring semesters and for the summer session. It also certifies students for degrees and diplomas to the President and the Board of Regents.

The staffing program in the Office has not kept pace with the rapid growth in student enrollment over the past ten years. Studies carried out by mainland universities have resulted in a recommended minimum staffing formula of one clerical position for 500 students. The effectiveness of this office has progressively bogged down with increased enrollment and concomitant failure to add clerical staff. Understaffing has reached a point where only a planned improvement over the next several years can bring the number of personnel up to a level of reasonable adequacy. Six additional positions have been requested for 1964–65. Should these be added, the staffing formula would be one clerical position for 1,195 students. Because proper handling of applications for admissions to the University represents one of the most important public contacts, the greatest efficiency in service is mandatory. Efforts toward increased mechanization of activities in this office will also alleviate staff shortages.

University Placement Office The University Placement Office assists students and alumni in the selection of career objectives and in planning job campaigns. It provides information to students, alumni, and faculty on job opportunities, and provides a service to business, industrial, and government employers that will enable them to establish contact with qualified University of Hawaii seniors and alumni for positions available in their organizations. Its principal function is that of promoting the employment of University of Hawaii graduates in the state and nation.

Student Employment The Student Employment Office maintains a part-time employment service through which students are placed in jobs on the campus and in the community. Hundreds of students work part-time in a great variety of on-the-job situations on and off campus. Part-time jobs funded from both general appropriations and extramural funds for research will increase greatly in number in the years ahead. By relating job opportunities to job applicants this Office serves an important and necessary service.

Student Housing Office The Student Housing Office administers the student housing program on campus as well as providing information on available housing for students off campus. In addition to being concerned with the physical well-being of students, the Office is responsible for the development of programs of activities within the residence halls which promote the educational goals of the University.

Student Health Services The Division of Student Health Services presently provides only limited out-patient medical services for students. In addition to this limited medical treatment for minor illnesses and accidents, first-aid-type care, and health counseling, the health service is responsible for a follow-up of the physical examination taken by entering students. When a need is indicated, additional physical examinations are made by one of the health service physicians. Student health insurance is available on a voluntary basis through the Associated Students of the University of Hawaii.

During the fall semester 1963, the new Student Health Center was put into operation. Through this service bed care is provided for a minimum number of students, and 24-hour service is available for emergency cases. As the University develops more student residences it is mandatory that we approach some degree of respectability in terms of staffing the Center. Detailed comparisons have been presented, and will be presented again to the State Department of Budget and Finance and to the legislature, showing services and costs for universities of our size similarly located in metropolitan areas. This year, critically needed staff increases have been requested by means of funds rather than actual positions. With these funds additional medical service will be employed on an hourly basis as needed and other services will be provided through contractual arrangements.

Veteran Affairs and Financial Aids As soon as staff is available there will be consolidated in one office several services which are now provided as a part of other divisions in the Office of Student Personnel. An Office of Financial Aid will be established which will be responsible for student employment, scholarships, loans, and placement. This office will also handle veteran affairs and maintain the selective service records.

Program Development

During the decade ahead in which the student body of the University will double, services provided by the Office of Student Personnel will be increasingly necessary to provide counsel, guidance, and expanded opportunity to participate in extracurricular activities to supplement classroom programs. The various services of the Office will require support in direct proportion to the increases in the student body.

Largely the result of its youth, rapidity of growth, urban location, and a predominantly off-campus student body, the University of Hawaii lacks to a considerable degree those campus traditions which foster the loyalty and cohesiveness of its students, faculty, and alumni which are characteristic of many institutions of distinction. To strengthen the concept of a unified University of Hawaii and to enrich the educational opportunities of our students, the need is great for the development of a suitable College Union or Campus Center and the expansion of student housing.

The College Union For over 10 years the present Student Union in Hemenway Hall has been both outmoded and outgrown. Urgently needed is a facility to house an appropriately organized, well-considered program for the community life of the University. The College Union contemplated proposes to fulfill several purposes:

(1) It will provide services, conveniences and the amenities the members of the University community need in their daily life on the campus, and which will facilitate widespread acquaintanceship among students and faculty through the informal association outside the classroom. With larger numbers of students, an increasing number of whom are being housed on the campus, there has developed a requirement to meet the physical and recreational needs of a growing residential student body and to encourage non-resident students to join more intimately in the life of the campus.

(2) The Union, as the center of the University community life, would serve as a laboratory for training students in social responsibility and for leadership in our democracy. Many studies have shown that students who lead college union activities, as contrasted with those who do not so participate, become more active participants in civic affairs and much more active as officers of organizations and candidates for public office.

(3) The Union would develop programs and facilities which encourage the mingling of students, faculty, alumni, and friends. With appropriate development, the Union will serve as a unifying force in the life of the University, fostering enduring loyalty to it.

The Center is conceived of as essentially a self-liquidating project of the University. Financing proposed includes funds from the Hemenway Union Board, the State of Hawaii (principally in exchange for the existing Hemenway Hall building) and from a revenue bond issued to be handled by an assessed student fee and proceeds from operations (book store, food service, and other auxiliary enterprises) which would be sufficient to amortize a loan from the Housing and Home Finance Agency. Present estimated cost of the total facility is expected to be about $3,750,000.

Student Housing The organization and physical expansion of university residence systems throughout the country has come in part in recognition that residential facilities have broad educational values, as well as functioning to equalize educational opportunities by providing good housing facilities for students at relatively low cost. The continued growth of the University's enrollment, coupled with the relatively limited campus housing now existing, make it certain that additional student housing will be needed in the future. Another certainty is the desirability of having the University provide the housing. The added guidance available to the student in University-controlled housing and the assurance to parents outside of metropolitan Honolulu that the student will live in a proper environment are completely accepted operational principles. Most major universities provide a substantial share of student housing, and many schools require that freshmen and sophomores live on campus.

The University of Hawaii Housing Study prepared by Harland Bartholomew & Associates in May 1963, recommends that the University of Hawaii establish a policy of endeavoring to supply housing for at least one-half of the single students who do not live at home or with relatives, and for 10 per cent of the full-time-equivalent enrollment of married students. On the basis of this recommendation, housing for 1,830 single students and 70 married students is needed during the current academic year. Facilities are presently available for 581 single students; none for married students. Estimated needs based on the recommended University Housing Policies call for facilities for 2,170 single students and 80 married students by 1965-1966, and 3,350 single students and 125 married students by 1974-1975. Based on what is presently available, the report indicates that we need to construct facilities to house 2,666 single students and 125 married students by the academic year 1974-1975. With the rapidly rising enrollment at the graduate level the recommended housing units for married students appears much too low.

Estimated requirements for student housing strongly support the proposed construction plans of the University for the years 1964, 1965, and 1966. Should this program be implemented, dormitory housing for 1,500 additional single students and 80 units for married students and faculty will be available by the fall semester, 1968. The expansion of student housing on the campus is essentially a self-liquidating project. The recommended level of development will involve an estimated total expenditure for buildings and equipment of $7,240,000 by 1968.

Contingent factors might, of course, affect the future housing needs of students. Among the more important possibilities are the development of off-campus private housing for students in an area adjacent to the University and the potentialities for the development of community colleges. Thus, a continuing evaluation of the housing needs of students must be made on the basis of which the proposed Student Housing Plan should be modified as necessary. To implement the University's housing policies, serious consideration must be given to the acquisition of available land adjacent to or near the campus.

PHYSICAL EDUCATION and ATHLETICS

Role

Although universities are essentially intellectual institutions, they embrace many activities which are not directly related to the intellectual progress of the student. Unquestionably, certain values to the student accrue from these out-of-class, out-of-laboratory, out-of-library activities. Nonetheless, such activities must proceed within the perspective of the proper ends of a university.

American universities have traditionally encouraged some form of physical exercise for the students. Students may be required to participate in physical education classes for part of their university careers, with the expectation that this will help them maintain present health and vigor, and that they will develop interests in sports which can be carried on later in life to the augmentation of their well-being. Furthermore, departments of physical education frequently have the responsibility to train the physical education teachers for the schools of the constituency which they serve.

Intramural programs are common. Here the purpose is to involve on a voluntary basis a large number of students participating in competitive sports at a level somewhat below in quality as that of intercollegiate competition. Finally, most universities sponsor some kind of an intercollegiate athletic program. Each of these types of activities is treated subsequently in greater depth, with recommendations as to their future direction at this University.

Instruction in Physical Education

The Department of Health and Physical Education offers a curriculum directed to the following ends:

(1) To provide the instruction to meet the requirements of the several colleges, all of which require at least some work in this field.

(2) To introduce students to various sports which they can carry on as adults, for both recreation and physical well-being.

(3) To train prospective teachers of physical education in the schools, as well as recreational leaders.

The quantity of instruction suitable to achieve the desired objectives must be reviewed continually, as are other curriculums, but the minimum quantity should be a standard University-wide requirement. Additional course work above this minimal program should be the choice of the individual student in relation to his personal interests and needs, and of certain curriculums which require additional formal instruction in this field. Inexorably increased pressures for additional academic course work to keep students abreast of the vital explosion of knowledge must be adjusted in the students' programs to take into account an equally inevitable increase in leisure time for a more highly educated and technically trained populace which will work at jobs requiring little or no physical exertion. Learning to participate in nonteam sports (tennis, golf, surfing, etc.) will therefore assume increasing importance in the years ahead.

Intramural Athletics

Presently, the intramural program of the University is underdeveloped and undermanned. Only one quarter of a faculty position is allotted to organize and supervise intramurals for men, with a similar allotment for women's intramurals. Costs of the intramural program, other than the fractional faculty salaries, are now borne exclusively by the Associated Students of the University of Hawaii, and only $2,618 was spent on the program in 1962-63.

As the University increasingly becomes residential, coupled with the rapidly increasing number of foreign students, many of them East-West Center grantees housed on the campus, implications for the future development of intramurals are clear. Both competitive and non-competitive programs will need improvement in quantity and kind. Fraternities, clubs, dormitory squads, and independent teams will provide competition in both our traditional American sports and in foreign ones such as soccer, cricket, Sepak Raga, and field hockey.

With the needed development in intramurals will come increased requirements in staff, facilities, and financing. A strong emphasis on this aspect of our athletic program is highly recommended.

Intercollegiate Athletics

On any university campus there exists a number of young men and women who have acquired sufficient proficiency in a sport to enjoy testing themselves against those from other institutions who have acquired similar proficiency. In addition, at least at most institutions, the students enjoy watching this competition, and it may indeed provide some sort of unifying force. It is also true that a large number of citizens enjoy observing these contests, and there is no more harm in citizen observation and interest in athletic contests than there is in their delight in witnessing other public performances staged by the University.

The University of Hawaii should have a vigorous program in intercollegiate athletics, but necessarily a program which is related to the University's unique position among American universities. To some extent it must be recognized that the University's position has a negative effect on its involvement with intercollegiate athletics. Distance and travel costs minimize participation in extensive mainland schedules, particularly where large squads must be transported. Inevitably many of Hawaii's best prep school athletes will be attracted to mainland institutions.

Not all aspects of intercollegiate sports are negative for Hawaii. Our equable year-round climate permits longer practice and playing seasons than our mainland counterparts enjoy. We can also look toward Asia for competition in sports commonly played there. The presence on the campus of the East-West Center grantees gives added reason for the University's intercollegiate athletic program to have an international flavor unequalled by any other American institution.

A consideration of all these factors seems to indicate that the University should have an intercollegiate program in a number of sports, but giving particular emphasis to those in which it has a chance to gain distinction. It is proposed that there be a program in intercollegiate athletics in the following sports: football, basketball, baseball, track, swimming, tennis, golf, wrestling, volleyball, soccer. The latter, a sport of great popularity in Asia, would give a logical first step in a recognition of the presence of the East-West Center grantees, as well as other students from Asia. Emphasis should be placed on basketball, swimming, track, and tennis, at least at the outset.

Football is not recommended for emphasis. The University should play in intercollegiate football, provided it does not attempt to enter the "Big Leagues." It is financially possible to develop a suitable schedule which would include as many as five or six intercollegiate games.

Above all, the student athlete must first be a student before he is an athlete. The University of Hawaii should have no part in assembling a corps of athletes who are not interested in nor dedicated to securing a good collegiate education. Nor should the student athlete receive any special academic consideration. He should meet precisely the same requirements for admission as does any other student. Certainly, a student should not be permitted to participate in intercollegiate athletics unless: (1) he is enrolled in the University for at least 12 credits; (2) he has at the end of the semester preceding the season made satisfactory progress toward his degree. Specifically, he should have accumulated at least 12 semester credits for each semester enrolled, with an over-all cumulative grade point average which meets at least the minimum required for good standing in the University.

Facilities

Recent studies of parking and athletics indicate that the entire quarry area must be devoted to these activities. Fortunately, all facilities required for intercollegiate athletics can also be used for intramurals and for instruction in physical education. A soccer field, softball diamonds, general playing fields, additional volleyball, basketball, and tennis courts are all needed. A small building is needed to house courts for badminton, handball, and squash, as well as weightlifting facilities. Many existing facilities need to be improved or completed. A diving pool, lockers, showers and dressing rooms, classrooms, and bleachers should be added to the pool now under construction. The tennis, volleyball, and basketball courts should be repaved, and the tennis courts lighted for night play. Once preliminary work in leveling, drainage, etc., is done, at an estimated cost of $183,000, these additional facilities could be provided at a cost of about $660,500.

Organization of Athletics

The Department of Health and Physical Education is quite properly administered within the College of Education. Ideally, from an organizational point of view, intercollegiate athletics should be a part of the Department of Health and Physical Education, and perhaps this eventually may be possible. But for the present, it seems best that the President of the University assume direct responsibility for the intercollegiate athletic program. To accomplish this the establishment of a Department of Intercollegiate Athletics is recommended, the administrative responsibility for which will rest with the President.

The administrative reorganization of athletics recommended above brings up the question as to whether the rule of the past, to which only one exception has been made, of having all coaches appointed faculty members in the Department of Health and Physical Education, should continue. Ideally, this is sound policy, but its implementation results in difficulties. For example, persons who may be qualified to coach intercollegiate athletics may not happen to possess the particular teaching competencies needed by the Department of Health and Physical Education at a particular time. Furthermore, one can never be sure how long a coach will be in a position to continue in that role. If all coaches are required to be members of the faculty, a variety of questions of tenure and promotion also arise. Conceivably, the Department of Health and Physical Education might become filled with ex-coaches and thus find itself considerably restricted when hiring staff for particular competencies in instruction. It is recommended that when the appointment of a coach is contemplated, the Department of Health and Physical Education be consulted as to whether or not the Department wishes to give him faculty status. Joint appointments could be made, with the division of time carefully worked out in advance.

If a coach who is to be appointed does not meet the needs of the Department of Health and Physical Education as a faculty member, he would then be appointed only on a contractual basis in the Department of Intercollegiate Athletics. College graduation, coaching competency, and good moral character would be the primary qualifications.

Intramural sports should be developed and administered within the Department of Health and Physical Education, with an advisory committee on intramurals, of which the Director of Athletics would be a member to encourage the greatest possible cooperation in the use of equipment and facilities.

Financing the Athletic Program

Capital costs involved in the development of the athletic plant in the quarry are a legitimate expenditure on the part of the State of Hawaii. As noted above, a rough preliminary estimate indicates that approximately $843,000 is involved. Not all of the money would need to be appropriated in one year. A three-year program of capital improvements is recommended with $253,000 in fiscal 1964-65, $340,500 in fiscal 1965-66, and $250.000 in fiscal 1966-67.

A reasonable increase in the operating costs for the physical education program and the intramural program are recommended for state appropriation. A full position for the men's intramural director and a half-position for the women's intramural director are required. Obviously, increased facilities will require increased maintenance costs as well as more supplies and equipment.

At present, the intercollegiate athletic program is financed solely from student fees and game receipts, except for the salary of the Director of Athletics which is paid from state appropriations. Financing has been chronically inadequate and should be strengthened for both intercollegiate athletics and intramurals by having the state pay the salaries of coaches and other personnel directly associated with the intercollegiate program. Approximately $40,000 annually would be required to implement this plan at the outset.

EAST-WEST CENTER

The Center for Cultural and Technical Interchange between East and West, established by the U.S. Congress in 1960, has for its objective the development and improvement of mutual understanding among the peoples of Asia, the Pacific area, and the United States. Organized to achieve this goal are three major programs: an Institute of Technical Interchange, an Institute of Advanced Projects, and an Institute of Student Interchange. Although each institute has considerable impact on the University, the Institute of Student Interchange is by far the most important in this regard, and is the only one touched upon in this Plan. Through this Institute, the East-West Center provides a large number of scholarships for selected young men and women from Asia, the Pacific Basin, and the United States. Most of these students undertake studies for about two years in the regular academic programs of the University.

The total number of scholarships is expected to rise from approximately 700 in 1963–64 to a peak of about 2,235, to be reached in 1970–71, a three-fold increase. Estimates for the intervening years are 840 in 1964–65, 1,135 in 1965–66, 1,365 in 1966–67, 1,595 in 1967–68, 1,825 in 1968–69, and 2,055 in 1969–70.

Ninety per cent of the grantees are expected to be graduate students and about two-thirds of these will be enrolled for graduate degrees. About one-third of all scholarship grants will be made to American students, the remaining two-thirds to students from countries of Asia and the Pacific Basin.

The programs of study which the Institute is most likely to stress in granting scholarships in the future are: the teaching of English as a second language, Asian-Pacific languages, linguistics, Asian studies, American studies, tropical agriculture, marine biology and fisheries, oceanography, microbiology, public health, sanitary engineering, geophysics, and entomology. Support for the academic programs required for the East-West Center grantees is provided the state through a cost-of-education stipend out of the Center's federal appropriation.

The projected increases in the number of grantees are contingent on funds being available for the construction of student housing. Scheduled for construction is housing for 100 married students in February 1965, for 480 students in February 1966, and for 120 students in February 1967.

Part IV: PUBLIC SERVICE PROGRAMS

The University of Hawaii's programs of public service have been increasing in recent years, not so rapidly as its teaching and research activities, but still to a degree that requires comment. Members of the faculty of the University may rightly be said to carry somewhat greater responsibilities to the local community than faculty members in public universities in parts of the mainland. The University is the sole public institution of higher learning in Hawaii. Distance from the continental United States also brings with it a special obligation and role. Undoubtedly the public's need for the services of the University will continue to grow, and a statement on public service programs is therefore appropriate.

It is obvious that the University cannot assume obligations beyond its available resources. As in the case of teaching and research, the future growth of public service programs should be selective rather than comprehensive. With limited resources, teaching and research must always command the highest priorities; no university is in a position to carry out a comprehensive program of public service. This means that the University should not undertake public service programs except when they are intimately related to the basic objectives and functions of the University, teaching and research. For example, programs should be closely examined to make certain that they are productive of useful information—"feedback"—of a kind that assures that the long-range functions of the University are being strengthened and served.

The following specific but not necessarily definitive criteria should be kept in mind when determining the appropriateness of a given program and appraising any new proposals. First, the University should undertake no program for which facilities are available elsewhere in the state—e.g., in the community organizations, in state and county departments, etc. Second, no program should be established in areas in which the permanent dependence of the community on University leadership may be detrimental to the growth of independent community leadership. Third, in the University's international public service programs, the focus should be on Asia and the Pacific Basin, and on activities for which suitable faculty, research facilities, or community resources exist.

In other parts of this Plan, the point has been repeatedly made that the members of the University faculty and staff are encouraged to promote the cultural and economic development of the state by utilizing their special abilities and skills in research, teaching, scholarly or artistic production and consulting, over and above the full requirements of the position to which they are appointed. Such additional supplementary activity must in no way interfere with the creditable performance of the primary obligation to the University, must be of a professional nature and should contribute to the professional competence of the faculty or staff members.

COMMUNITY SERVICES

Aquarium

The University has operated the Honolulu Aquarium since 1919. An important educational exhibit in itself, the aspect of the Aquarium most closely related to the University's objectives and programs is the classroom and research space comprising the Waikiki Branch of the Hawaii Marine Laboratory.

For many years students and research workers in the field of marine biology have used a portion of the Aquarium building. If plans for development of an oceanographic center at Kewalo Basin should materialize, the instructional and research aspects of the University's program would be shifted to this more suitable new facility, leaving the space now occupied at the Honolulu Aquarium available for expansion of activities related to the Aquarium's exhibits. When the Kewalo site is developed, the University should transfer control of the Aquarium to a city or state agency, which would be more suitable than having the University develop and manage it as a public educational and recreational exhibit.

Prior to an eventual transfer of jurisdiction over the Aquarium, certain improvements could well be made to bring its exhibits closer to their potential public value. Simultaneously, an increase in admission fees should be made to offset the additional costs of improved operations. More of the magnificent marine fauna and flora of Hawaii could be introduced if the Aquarium had its own boat and equipment for the collection of the rarer or more interesting species. Reliance on commercial trap fishermen has proved insufficient in many aspects.

Collection and display of especially interesting specimens could receive free publicity in the press which, in turn, would increase income from admissions and add to the education and enjoyment of visitors to the Aquarium.

The present entrance fee of 25 cents is too low. Americans are psychologically conditioned to equate value with cost. A doubling of the admission fee (with a somewhat lower fee for children and servicemen in uniform), might well increase public appreciation of the exhibits. Organized groups from schools accompanied by a teacher should continue to be admitted without charge.

Cooperative Extension Service

Role and Present Status The mission of the Cooperative Extension Service is to provide instruction and practical demonstration in agriculture, home economics, and related matters to the people of the state.

Working out of county offices located throughout the state, Extension Agents and Specialists maintain daily contact with farmers, ranchers, and other non-urban as well as urban folk. Many contacts are made through home visits, telephone communication, TV, radio, and meetings of clubs and community groups. A variety of pamphlets and other publications are also produced. In these ways new developments in the technologies relevant to agriculture and home economics are brought to the attention of both rural and urban residents. The county agents also have the important function of informing specialists of the College of Tropical Agriculture about problems which require further research, and thus provide an important liaison between the farmers and homemakers and the research staff of the College.

Young people are given education in the arts and techniques of agriculture and home economics through the 4-H Clubs. Firsthand experience in production and management problems is gained through an intensive program of club activities. Career exploration, leadership, and safety projects are examples of activities aimed at preparing youth for a complicated adult life. This experience has had an important role in molding the character and self-reliance of several "younger generations" in Hawaii.

Program Development During the next 12 years the Extension Service must increase emphasis on instruction and the demonstration of new techniques applicable to production of export commodities such as macadamia nuts, papaya, passion fruit, and cut flowers. A second area of intensified interest will certainly be management efficiency in the production and marketing of animal and plant products primarily for the local market.

The demand upon Extension specialists' time is on the increase in Hawaii. This situation is brought about in part by the increasing sophistication and level of education of the farmers, and in part by the fact that on the Island of Hawaii, for example, there are now more diversified farmers than there were in 1950. In addition, the independent sugar and pineapple growers are now beginning to look to the University for assistance.

Education in the potential of forestry products is an important area where Extension education must play an important role in the future. Although the State Forestry Division is planting nearly 3,000 acres of forest trees annually, at this rate it will require nearly 35 years to plant sufficient forest trees ultimately to produce the amount of wood Hawaii now consumes annually. Increased rates of private plantings could greatly reduce this period for attaining self-sufficiency; thus a clear mandate exists for extension agents to encourage private planting.

Increasing urbanization of Hawaii's population brings with it rapid social and technological changes. Keeping pace with these changes requires the extension of education to more people in areas such as landscaping, youth programs, and home economics. But, in addition, urbanization brings new kinds of needs particularly in areas such as community development and public affairs.

One county agent is now assigned to this type of work on a full-time basis with others participating part-time. The role of the extension agent in this activity is to serve as a convener and coordinator of groups interested in increasing the economic potential of an area. Federal funds are specifically allocated to this activity.

Adult education and community development in both rural and urban areas require a coordinated program. The combined experience and facilities of the Cooperative Extension Service and the College of General Studies could be used to supplement and enrich the efforts of each. County extension offices, for example, could well serve as a "doorway to the University" if they were adequately supplied with general information and personnel qualified to advise and counsel on programs of community development. Some needs of both rural and urban people can be served best by formal course programs organized by the College of General Studies, others might best be met through techniques developed by the Cooperative Extension Service.

Industrial Relations Center

Role and Present Status The Industrial Relations Center was established in 1948 to promote understanding of labor-management techniques, problems, and policies and to provide sources of information in these fields. Through public lectures, conferences, and discussion groups, by maintaining a library with current information on labor-management relations, and by publishing a monthly newsletter and occasional research studies on industrial relations in Hawaii, the Center has been carrying on its objectives. The Center is a unit of the College of Business Administration, but has never been adequately financed or staffed to make a significant impact on industrial relations in Hawaii.

Program Development The Center plans for 1964–65 involve a program of labor-management education. A series of about 12 institutes or seminars is proposed to provide leadership training for both union and management personnel and to promote wider understanding of the respective positions of labor, management, consumer, and government within the economy of the state and nation.

As soon as staff and funds permit, the Center hopes to begin a program of pre-retirement education work through unions and companies to help the needs of people facing accelerated retirement due to automation. Other programs envisioned include a study of comparative labor-management relations in the Pacific Basin and Asia, a training program for labor leadership in the developing countries of Asia and the Pacific Basin and the planning of a curriculum for secondary schools for teaching labor-management relations.

Legislative Reference Bureau

Role and Function The Legislative Reference Bureau provides research and related services, primarily for legislative use but also for the executive branch of the state government, for the University, and for other governmental agencies. Its research publications and legislative aides are available to all departments of the state government and generally to the community.

Present Status The Bureau, created in 1943 by the territorial legislature, is a separate department of the University responsible to the Vice-President for Academic Affairs. Regular quarters of the Bureau are in Sinclair Library, but during legislative sessions the Bureau establishes temporary offices near the capitol.

The professional staff includes lawyers, public administrators, political scientists, economists, and other specialists, some of whom hold appointments or teach in the various academic departments of the University. Special consultants are retained on occasion to assist the Bureau in unusual and highly technical assignments.

A special governmental research library maintained by the Bureau contains about 30,000 books and pamphlets and 150 periodical titles in public finance, state government, comparative administration and related areas. Bureau library facilities are utilized by faculty members and University students, particularly those in the field of government. Most of the collection is not duplicated in the Sinclair Library.

Program Development The Bureau does not plan to modify significantly its present role and organization, nor to expand its present staff or budget beyond what is necessary to meet normal incremental cost increases.

Several Bureau staff members are currently participating in a University project to provide technical assistance to commissions established in the counties of Hawaii, Kauai, and Maui to draft charters for local government, under an act of the 1963 legislature. Should the University plan to continue to provide similar services to local governments throughout the state, and to have this function discharged by the Bureau, some increase in its staff may be required. Another possible cause of expansion would occur if the University were to give assistance in establishing and counseling legislative service agencies in other jurisdictions in the Pacific Basin area. However, there are no plans to offer such services at the present time.

Office of Publications and Information

Role The Office of Publications and Information, a unit in the University's administrative structure, has the responsibility of transmitting information about the University and its programs to the public. This function should not be equated narrowly with publicity or promotion, for these are only parts of a large whole. "The name and fame of a college or university," writes Arthur L. Brandon, director of university relations at New York University, "evolve from the combined actions and words of all persons associated with it." Such actions and words may originate anywhere in the University—among the students, the faculty, the administration, the regents, the alumni, or with an individual or a group. Reports and interpretations of the deeds and words of these persons make up the information transmitted to the public by this necessary official service.

In the widest sense, the University's public includes the campus community, all the residents of the state, people on the mainland, and theoretically anyone anywhere in the world. The media of communication or transmittal may be in the form of institutional publications like college catalogues, public addresses or official statements, news releases, feature articles, radio or television programs, photographs and visual aids, bulletin board announcements, personal conversations and letters. Rare is the American college or university today that does not maintain also, like the University of Hawaii, some form of internal communication medium, such as the Faculty Bulletin.

Present Status Though it is important to formulate the broad function of the Office of Publications and Information, it is equally necessary to provide a staff and organization commensurate with these responsibilities. This support the Office has never had, and so its performance has fallen short of the many demands and high over-all competence required by the University. It is fair to add that the Office does what it can fairly well, but needs budgetary support to do more. Operating presently with a director, only one news editor, two publications editors, a photographer, and two secretaries, the staff has remained virtually static in number for 15 years. Yet during this period the University has increased greatly in size, developed established programs to higher levels, and added various new programs of notable significance.

The central problem of the Office is that of recruiting a staff adequate in number and professional skill to keep pace with the University's needs. The limited opportunity for trained public relations personnel in Hawaii has unduly narrowed the field of selection of prospective employees. Furthermore, the present salary levels under Civil Service classifications handicap the University in competing against private industry for professional assistance.

Future Development Areas for future development, after the staffing problem has been realistically met, include: (1) fuller reporting of the scholarly activities of the faculty; (2) adequate coverage of the campus for newsworthy information; (3) community relations services, such as special publications and campus tours; (4) the provision of a more adequate communications service among the many units of the campus. The University's catalogues compare favorably with those of other institutions. Their continued improvement will be a very important contribution to the University's development during the next decade.

The advantages to be gained from a fully effective Office of Publications and Information should be apparent. The role of the Office in relation to the total University and its extended community should be re-examined, so as to relate its staffing pattern to up-to-date concepts of its institutional responsibilities, keeping in view the University's complex requirements and growing prestige.

Delinquency Prevention and Control Training Institute

Concern about increasing rates of juvenile delinquency in Hawaii, as elsewhere, came to a focus with the report in 1963 of a state committee of the Western Interstate Commission on Higher Education (WICHE). The urgency of the problem in Hawaii was expressed subsequently in H.R. 202, unanimously voted by the 1963 State House of Representatives, asking the University to explore the feasibility of implementing the committee's recommendation that federal funds be sought to create, on an experimental basis, a professional training institute in delinquency prevention and control at the University.

Implementation of the resolution is already well underway. An expert review of the Hawaiian scene has been made by an official of the National Institute of Mental Health at the request of the University. A proposal is being prepared for consideration by the Department of Health, Education and Welfare for the initial financial support needed to establish such an institute.

The institute is conceived of as embracing both training and research. The training would be designed to bring new knowledge and techniques to workers in the field of delinquency—teachers, court employees, correction officials, law officers, personnel in religious and recreation agencies, counselors, etc. The research would have a supporting role. Foremost among projects to be developed would be the collection of more complete and systematic data on delinquency to help ascertain its causes and foci. Later, research on developing improved techniques in preventing delinquency and on mobilizing community resources for its prevention would be stressed.

At the outset funds will be sought to assemble three persons skilled in those social sciences most pertinent to the problem: an institute director, a training coordinator, and a coordinator of evaluation and research. These three are expected to plan the curriculum and research program during the initial year.

A three-year federally financed program is being planned to establish and operate the institute. Should the program prove successful, its future financing would be sought from both state and federal sources.

INTERNATIONAL SERVICES

Because of its geographic and historic setting, there is imposed on the University of Hawaii special national and international obligations and opportunities related to its basic objectives in education and research. Through continued selection of faculty interested in Pacific and Asian affairs, an expertise is now built into the University which is of great value to developing Pacific and Asian subtropical and tropical areas. Our appropriate share of America's service to these countries must continue to be provided within the framework of the policy on the University's public service role set forth on page 79.

Organizationally, international programs should be administered by the college dean or the director of research, whichever is most directly involved. To examine proposals for new international educational ventures and to review the progress of existing programs, an International Programs Reviewing Committee should be established composed of academic deans, the Director of Curriculum and Faculty Development, and the Director of Research.

For most effective coordination and information on international programs an Office of International Programs should be established whose director would be responsible to the Vice-President for Academic Affairs. This office would function to keep up-to-date information on all international programs, serve in a liaison capacity with campus and off-campus agencies handling international programs, provide advice on contractual arrangements and to assist in developing those aspects of international programs which will add to the research or instructional aims of the University.

Agriculture

Personnel of the College of Tropical Agriculture have participated in various consultative and instructional activities in response to overseas requests. At present the University is engaged in assisting the improvement of administration, curriculums and research programs of Kasetsart University in Thailand. Individual faculty members have served as consultants in the Ryukyus and the Trust Territories, and have frequently served in Asian countries during sabbatical leaves.

A responsibility which the Cooperative Extension Service has accepted since World War II is that of serving foreign participants in various types of agricultural and home economics extension training. Recently 20 people from American Samoa were given such a training program. Participants in these programs are sponsored variously, including the Agency for International Development (AID), foreign governments, the Food and Agricultural Organization (FAO) of the United Nations and the East-West Center. During 1963 a total of 80 participants from 17 countries were trained in 33 separate programs in which the average stay per person was 38 days. While this program could be carried out by Extension personnel on a volunteer basis at the outset, it obviously has increased to the point of requiring a full-time coordinator.

It is certain that requests for these types of training services will be increasingly frequent in the future. The University recognizes its responsibility and must somehow respond to these needs from foreign countries in addition to meeting its responsibilities to the state.

Education

The College of Education is presently co-signer to three contracts, two of which are with the Agency for International Development for vocational trades education in Thailand and Pakistan, and the third is with the Trust Territory of the Pacific in the field of teacher education.

Negotiations now in progress will provide for the extension of the Thailand Contract through June 1965 to make it possible for the University team in Thailand to promote the further development of the supervisory staff, to provide more time for a technician to work with Thai personnel in the establishment of the 18 new schools with shops, and to continue to assist the Ministry of Education in the development of its pre-service teacher training facility.

The Pakistan Contract has been extended through 1965 to permit the University team to solidify its contributions to the technical training centers there as well as to provide additional advisory service to three other centers now in operation in Pakistan.

Present plans for the Trust Territory involve the training of 30 prospective teachers each semester at the Teacher Education Center at Ponape. This contract is based on a five-year program annually contingent upon mutually agreeable terms and budget limitations.

Fisheries

Hawaiian fishery resources are similar in character to those of other island groups in the tropical Pacific. These resources are of two general kinds: those linked to the islands and those of the open sea. The first kind, the reef and shore fishes, are largely of value for subsistence or recreational fishing and for sale in local fresh-fish markets, whereas, the second includes the tunas which may be abundant enough to provide a valuable product for export.

The island communities of the Pacific, particularly those of the Trust Territories, have undergone great changes during and following World War II, often resulting in far greater dependence for subsistence items on the outside world than previously was the case. Study and appraisal of their fishery resources through cooperative investigations of the Hawaii Marine Laboratory, federal and local agencies, strengthened by the establishment of local field stations as bases for research and training, could contribute greatly to restoring their self-sufficiency in food production. The University faculty in marine biology has a high level of competence in mid-Pacific marine resources.

Public Health

Hawaii's geographical position and significant development in the field of public health require that it share its facilities, programs, and professional services with Pacific island communities and Asian countries. For many years personnel of the former territorial Board of Health and its successor, the State Department of Health, have contributed to educational, research, and service programs to many Pacific island communities. With the establishment of the University's Department of Public Health, a more broadly based opportunity to serve both Hawaii and foreign areas has developed.

On-campus programs of training are developing in relation to both local and international needs. East-West Center grantees and special professional and subprofessional groups brought to Hawaii by the Center's Institute for Technical Interchange are being served now and these programs will increase greatly in size and scope. Many of these programs are assisted professionally and facility-wise by the State Department of Health. Both agencies must increase their staff to facilitate the training of foreign public health workers through funds made available by national, international, and private agencies supporting such training.

Once accredited, the University's School of Public Health can extend its influence markedly through the Pacific Basin area in the health field through use of available federal program funds, such as is now being done for Latin America by the School of Public Health of the University of Puerto Rico. The significance of such a development was emphasized at the 1963 meeting of the Regional Committee of the World Health Organization (WHO) in Port Moresby, New Guinea, where a resolution was adopted urging the newly emerging countries to develop training and continuing education programs and facilities for health workers. So great is the need for such workers, this resolution was given highest priority in planning for health activities. Thus, Hawaii's skills in this field will be needed in ever increasing quantities in the years ahead.

Training Programs for Service Abroad

The Overseas Operations Program was established by the legislature in 1959 to develop both formal curriculums and ad hoc programs to train regular University students and other Americans, not regularly enrolled in the University, to work in Asia. A variety of programs has been organized to further the University's international responsibilities and opportunities by taking advantage of the diverse talents among the faculty with expertise in Asia and the Pacific island areas. Emphasis in this section of the Plan will be placed on special training programs for overseas activities, since the regular curriculum has been discussed earlier under the Graduate School.

Special international seminars on the university student level, such as the Afro-Asian Student Leader Seminar and others of similar nature, have been organized and coordinated under the Overseas Operations Program since 1961. Another highly successful international student interchange program was the Hitotsubashi-Hawaii Seminar of 1961 and 1962 which will be resumed on a home-and-home basis in 1964. Plans are being made to broaden the base of such seminars and to include students of other universities, but retaining Hawaii and Hitotsubashi as the host universities.

Training non-university students was initiated in 1962 when a Peace Corps training contract for North Borneo/Sarawak was awarded the University. Unusually good facilities for this program and subsequent ones were located at the abandoned Hilo County Memorial Hospital. Moreover, the rural nature of the Island of Hawaii seems especially appropriate for Peace Corps volunteers to effect an easier transition between highly-developed American communities and underdeveloped rural communities of Asia.

The University's initial efforts in Peace Corps training has been termed by the Washington, D.C. headquarters as "a superb achievement." Although successfully carried out, the early, short-term contracts for training brought almost insuperable difficulties in short-term staffing at all levels. Moreover, the complexity and variety of programs demanded unusual effort and excessive time of the professional part-time staff.

The year-long training contract now in effect will enable the University to stabilize staff, programs, and planning for improved facilities. An abandoned public school site in Waipio Valley has been acquired and a village of simple Southeast Asian huts has been constructed with the aid of citizens living nearby. When completed, Waipio will serve a dual purpose—as a supplement to more formal training as well as a testing ground for adaptability and confidence among the outward bound trainees. It is expected that Waipio will similarly serve trainees enroute to Asia from other Peace Corps training centers on the mainland.

Both the Hilo training center and Waipio can serve the state beyond their role with the Peace Corps. The special learning techniques and trained personnel can also serve other groups, especially business corporations who must send American families into developing Asian countries as a part of the investment of American capital and expertise abroad. One program of this type has been completed successfully and others are now under consideration. It is expected that such activities will parallel those of the Business Council for International Understanding which has created similar programs at the American University, Washington, D.C.

Opportunities for research and development, or "feed-back," for the University of Hawaii in such programs became apparent early in the development of overseas training programs. Such important elements of overseas programs as appropriate criteria by which to develop and measure courses of training, and to detect what makes an American effective overseas, were almost completely lacking. Systematic research of an interdisciplinary nature was clearly required.

Although a good start has been made in enlisting the research interests of social scientists on these problems, efforts should be intensified in the selection and training of the "overseas American." Peace Corps trainees, now numbering several hundred, provide an unique source of research material. Models for testing and evaluating over 600 trainees as overseas Americans are in process of development, and within the next few years the University research personnel should be able to contribute highly significant conclusions and recommendations useful for selecting and training for "effectiveness overseas."

Indications are that these types of programs will expand considerably in the future. The University and the state have been tested and found suitable to handle them. However, the magnitude of the operation, coupled with the financial and educational benefits realized by the state, demands an appropriate state-supported administrative organization to develop, coordinate, and administer such programs. The organization recommended for this purpose (p. 82) should be established as soon as is feasible. Moreover, state funds should be allocated to make necessary facilities available by remodeling buildings, or by new construction, both on the Island of Hawaii and on other neighbor islands as the growth and requirements of the program demand.

Part V: MAJOR RECOMMENDATIONS CONCERNING THE ACADEMIC PROGRAM

I. General Policies

PAGE

A. Enable the student to take increasing responsibility for his own instruction.
   1. Provide adequate study facilities: laboratories, library, study areas 22
   2. Provide continuous academic advising for regular students during first two years 22, 27
   3. Use comprehensive examinations and other means to let students go at own pace: emphasize *learning* rather than teaching 22, 48
   4. Expand selected-students, honors program and other opportunities for superior students 20, 21, 22

B. Improve the quality and effectiveness of instruction.
   1. Emphasize improvement of existing programs, rather than increasing number of curriculums and degrees; add new programs only selectively 20, 50
   2. Review each curriculum critically; reduce number of courses offered 20, 23, 26
   3. Reorganize programs and departments in light of new knowledge, bringing together interrelated disciplines 20, 30-31, 60
   4. Provide core curriculum for all freshmen, who would be enrolled in College of Arts and Sciences until admitted as sophomores into several colleges of the University 21
   5. Maintain present student-faculty ratio, but rigorously experiment with TV and other means of increasing ratio without impairing teaching effectiveness 21-22, 24-25, 31

C. Improve the facilities necessary for University programs.
   1. Expand facilities and support for research, giving special attention to the humanities and non-experimental social sciences 22-23, 54
   2. Improve library facilities (see specific recommendations below) 23
   3. Expand tape recording facilities available to language students; budget for language laboratories in interdisciplinary way 31
   4. Construct campus center, with bookstore, to supplement classroom experience 27-28

D. Strengthen factors enabling University to attract and retain a good faculty.
   1. Improve recruitment procedures and procedures for evaluating faculty members prior to granting tenure 23-24
   2. Maintain adequate, competitive salary schedules 23
   3. Adjust pay period from academic to fiscal year for faculty recruited from mainland or abroad, to help finance relocation costs 24
   4. Provide severance pay for faculty members not continued on staff 24
   5. Improve methods of selecting and remunerating department chairman; fix their annual duty period as for other academic administrators 24

II. Specific Academic Programs

A. College of Arts and Sciences
   1. Consolidate closely related subject areas, such as geophysical sciences, into new departments 30, 31, 59
   2. Consider establishment of new fields of concentration, e.g. department of mathematical analysis and statistical methods 30-31

   (See other recommendations particularly affecting this College under Part I: General Policies.)

B. College of Tropical Agriculture
   1. Consolidate several existing departments and courses 32-33
   2. Put home economics under associate or assistant dean 32
   3. Emphasize textile and food aspects of home economics to provide trained personnel for Hawaii's tourist industry; and continue to strengthen the curriculum in home economics education 33

4. Provide appropriate teaching facilities, especially laboratories for greatly expanded graduate studies ... 33-34

C. College of Business Administration

1. Examine curriculums with objective of consolidating departments and courses ... 35
2. Strengthen the faculty by adding persons with doctoral degrees where possible ... 35
3. Reduce teaching loads to meet accreditation requirements ... 35
4. Improve graduate curriculums ... 35
5. Develop plans for adequate facilities ... 38

D. College of Education

1. Consider establishing pre-teaching curriculum in arts and sciences, followed by specialized training in education at upper division and graduate levels ... 37-38
2. Complete shift of laboratory school functions from providing classes for teaching practice to serving as facilities for experimentation and demonstration ... 37-38
3. Develop educational research program ... 38-39
4. Develop programs permitting persons obtaining graduate degrees in subject matter fields to be certified for teaching with minimum formal educational course work ... 38

E. College of Engineering

1. Develop chemical engineering program ... 40
2. Strengthen programs at graduate level particularly in civil and electrical engineering, including electronics ... 40
3. Initiate graduate programs in mechanical and chemical engineering ... 40
4. Construct engineering building to replace outmoded facilities in engineering quadrangle ... 40

F. College of Nursing

1. Provide adequate facilities for training dental hygienists ... 41
2. Revamp medical technician internship program with better integration of classroom and internship training ... 41
3. Establish two-year associate degree program in general duty nursing ... 41-42
4. Exploit all available clinical facilities to allow increased enrollment in baccalaureate nursing program ... 42
5. Develop graduate training in all fields of nursing where College offers undergraduate programs ... 42

G. College of General Studies

1. Analyze course offerings to determine where selective additions would serve students seeking degrees, as well as unclassified students ... 43, 46
2. Provide academic advising for students ... 43, 44-45
3. Whenever possible make regular provision for instructional services, instead of staffing teaching programs by increasing the normal work load of daytime faculty ... 40, 45
4. Develop centralized service for bringing speakers and educational programs to communities throughout state ... 44, 45
5. Study means of implementing proposed bachelor's degree in General Studies ... 44, 45
6. Study means of establishing a Community Development Service, in collaboration with the Cooperative Extension Service ... 44, 45
7. Continue to strengthen Conference Center ... 44, 45

H. Summer Session

1. Consider requesting state support if necessary to offer more advanced or specialized courses with small enrollments to promote educational programs of regular degree-seeking students ... 45

I. Hilo Campus

1. Use authority over curriculum to design academic programs which make use of the flexibility of a small campus ... 46
2. Increase communications between the Hilo and Manoa faculties by more frequent use of facilities at Manoa and by exchange of faculty members; provide sufficient travel funds to implement program ... 46-47

J. Basic Biomedical Sciences School

1. Continue planning flexibly programmed curriculum leading to Master of Science degree ... 47-48
2. If program is approved by University and state government, seek private, federal, and state funds for construction of facilities and staffing ... 48-49

K. Graduate School

1. Concentrate on improved quality of existing curriculums, with only selective addition to doctoral programs offered ... 50
2. In the area of biological sciences consider establishing graduate programs in nursing, biomedical sciences, pharmacology, physiology, and doctoral program in public health 51
3. In the physical sciences, consider establishing doctorate in oceanography and electrical engineering; ... 51
   strengthen the supporting fields of numerical analysis and applied mathematics ... 51
4. In the social sciences, strengthen present doctoral programs in anthropology, political science, psychology, and history of eastern Asia; ... 51-52
   strengthen sociology to offer a doctoral program; ... 51
   strengthen economics, particularly regional and developmental economics; ... 52
   establish master's program in American studies ... 52
5. In the humanities, consider establishing doctoral programs in linguistics, Asian languages, drama, and English (stressing comparative Western and Asian literature) ... 52
6. In the field of education, add doctoral programs as research facilities and productivity are expanded ... 52

7. Provide adequate facilities in new buildings for graduate students and graduate programs 52-53

L. Research

1. Encourage research as fundamental responsibility of each member of professorial staff and provide scholarly climate which fosters integration of teaching and research, maintaining organizational flexibility........ 54
2. Provide adequate funds for basic staff, supplies and equipment required to qualify for extramural funds 54
3. Provide adequate funds in support of research in fields in which extramural funding is not usually available........ 54
4. Provide adequate funds for "seed money" especially for young scholars to initiate research programs prior to seeking extramural funds 54
5. Place Bureau of Educational Research, Engineering Experiment Station, Agricultural Experiment Station and other research activities organized to function on continuing basis under Office of Research Administration 55
6. Complete staffing and programming for Bureau of Educational Research........ 55
7. Reorganize Economic Research Center for more effective utilization of all available research talent in economics and business to undertake both long- and short-term projects 55-56
8. Provide facilities for Engineering Experiment Station in new engineering building and expand its work in electronics........ 56
9. Intensify research on potential agricultural export commodities and investigate potential by-products 57
10. Provide pilot irradiation plant and pesticide residue laboratory for research by the Hawaii Agricultural Experiment Station........ 58
11. Increase commercial forestry research by HAES, in collaboration with federal and state agencies 58
12. Increase use of junior professional personnel by HAES; establish new classification and pay scale for jobs not requiring Ph.D..... 58-59
13. Consider developing fewer, perhaps larger, permanent experimental farms, using short-term leases of private farm areas for experimental farming in various climatic zones...... 59
14. Continue comprehensive development of Hawaii Marine Laboratory........ 60
15. Develop facilities and cooperative programs of Pacific Biomedical Research Center........ 63
16. Strengthen Social Science Research Institute by appropriations to supplement private grants to provide participating faculty members more research time........ 64

III. Other Academic Programs and Facilities

A. Library

1. Accelerate acquisition rate over 10-year period for books and periodicals to approach national median holdings for universities of our size 67-68, 69
2. Mechanize processes for handling circulation of books to improve efficiency and cut costs 69
3. Establish 5-year program to convert library from Dewey decimal to Library of Congress classification 69
4. Establish 5-year program of binding presently unbound serial parts and pamphlets.... 69
5. Seek faculty status for all professional librarians 70
6. Construct Graduate Research Library in two phases 68-69

B. Statistical and Computer Center

1. Maintain modernity and efficiency of new equipment and add additional data processing devices as feasible........ 64-65

C. Communications Center

1. Emphasize development of adequate audio-visual services to academic departments...... 71, 72
2. Provide suitable radio programming and facilities to bring University activities to entire state 71
3. Develop closed-circuit television programming on campus to test rigorously effectiveness of classroom TV........ 71, 72

D. University Press

1. Seek faculty status for all professional staff members 72-73
2. Establish revolving fund to facilitate printing and re-printing of books........ 73

E. Office of Student Personnel

1. Increase staff of Office of Admissions and Records to staff-student ratio much closer to recommended minimum of 1 to 500 and review adequacy of services as machine methods are introduced........ 74
2. Expand staff of Student Health Services to service increased number of students in dormitories 74
3. Construct Campus Center to serve community needs of the campus, replacing outgrown Hemenway Hall........ 75
4. Construct sufficient dormitory units to accommodate at least half of single students living away from home or relatives, and at least 10 per cent of married students; acquire land adjacent to campus for this and other expansion 75

F. Physical Education and Athletics

1. Develop strong intramural athletic program encompassing sports in which Asian students excel, as well as American sports........ 76
2. Develop intercollegiate athletic program emphasizing basketball, swimming, track, and tennis, adding soccer and other sports in which Asian students excel........ 76-77

3. Retain intercollegiate football, within limits where University's team can compete on equal basis, and without compromising academic standards ... 77
4. Establish Department of Intercollegiate Athletics under the President ... 77
5. Appoint athletic coaches as faculty members only with approval of Department of Health and Physical Education; otherwise appoint them on contract with Department of Intercollegiate Athletics, without academic tenure ... 77-78
6. Construct facilities necessary for expanded sports and physical education program in quarry and provide for modest increase in staff ... 77

IV. Public Service Programs

A. Aquarium
   1. Improve aquarium exhibits, using increased admission fees to help pay costs ... 79-80
   2. If oceanographic center at Kewalo Basin is developed, move University facilities now at Aquarium to Center, transferring Aquarium to appropriate agency of state or city-county ... 79

B. Cooperative Extension Service
   1. Increase instruction and demonstration programs, emphasizing export crops and planting of commercial forest trees ... 80
   2. Cooperate with College of General Studies in advising community development programs and other programs for local improvement ... 80

C. Industrial Relations Center
   1. Provide with staff and funds to support new programs, including pre-retirement education, study of labor-management relations in Pacific Basin, and training program for labor leaders ... 80-81

D. Office of Publications and Information
   1. Increase quantity and upgrade quality of staff commensurate with importance of Office to University and Community ... 82

E. Delinquency Prevention and Control Training Institute
   1. Develop institute with federal and state funds as soon and as comprehensively as possible ... 82

F. International Service Programs
   1. Establish Office of International Programs to help formulate and administer overseas training programs ... 82, 83
   2. Establish International Programs Reviewing Committee to oversee international programs and ensure they are in long-range interests of University ... 82

Part VI: IMPLEMENTATION OF THE PLAN

In the foregoing sections an attempt has been made to define the University's objectives and determine its role in the community. To carry out this aim it has been necessary to clarify the objectives and roles of the several colleges, service units and research agencies comprising the University, to point out both adequacies and inadequacies in current services, to anticipate future enrollment and review expansion potentials in both instruction and research. Above all, a central guiding purpose of this study throughout has been to select those areas of desirable expansion which are in harmony with our natural assets and which will be of greatest immediate and possibly long-range benefit to the state and to the nation.

Now we come face to face with the more pragmatic problems presented by the growth in size and the need for quality and richness in our current and contemplated programs. What will be the operating costs? What are the prospective requirements and cost of necessary capital improvements? Finally, how can we meet the financial burden? Such questions are manifestly difficult to answer, yet this academic development plan would be incomplete if we made no attempt to assess the financial implications of this period of burgeoning growth and did not explore ways and means of meeting the public obligation.

From its overview of all facets of Hawaii's economy, and from its knowledge of the needs of other state agencies which provide essential services to our citizenry, only the legislative and executive branches of our government can ascertain to what extent the aims, objectives, and obligations of the University can be met through state appropriations and tuition and fees from students. But to this basic financial support must be added those additional funds provided by both governmental and private sources which, when matched with the creative talents of the faculty, convert an adequate academic program to one of marked distinction.

PROJECTIONS OF OPERATING BUDGET

Bases of Projection

The University of Hawaii operating budget is a formidable and complicated document because of the diverse nature of University activities and the many sources of income. The "University of Hawaii Expenditure Plan for Fiscal Year 1962-63," the most recent budgeting document available at the time the projections were made, has been used for a preliminary analysis of expenditures in the base year, 1962-63. In projecting costs reference has also been made to the 1963-64 appropriation. The cost analysis and projections include mostly state-borne expenditures, but inextricably interwoven with these are student fees, direct East-West Center support, Morrill and Sand Island funds and federal support to the Hawaii Agricultural Experiment Station and the Cooperative Extension Service. Definitely excluded from consideration are the Kasetsart, Peace Corps, Thailand and Pakistan contracts which are supported entirely by federal funds, ROTC expenses, and self-supporting auxiliary enterprises, such as most of the expenses of the College of General Studies, the Summer Session, the Book Store, Food Services, student dormitories and faculty housing.

The expenditure figure thus arrived at for 1962-63 was $14.4 million as compared with the direct state appropriation of $11.2 million. Actual operating cost, including federal funds, contracts, and self-supporting auxiliary enterprises, totaled about $18 million.

The University budget is compiled according to activity (Administration, Student Services, Instruction, Library, Organized Research, Maintenance and Operation of Physical Plant, etc.) and according to utilization of funds — Personal Services, including Student Help ("A" funds), Current Expenses ("B" funds) and Equipment ("C" funds). For gross projections all activities were grouped, but A, B, and C funds were treated separately. Under Personal Services, Regents (BOR) positions, including those for instruction (CI), research (R) and county agents (A), were treated separately from Civil Service positions (SR). Average salaries were calculated for the two categories of positions (BOR and SR).

The 1962-63 levels of Personal Services, Current Expenses, and Equipment expenditures were examined as to adequacy. Two glaring inadequacies have been discussed in previous sections: (1) the need for additional staff for academic advisors; and (2) the need for additional technical help, book binding and book purchasing funds for the Library. Other inadequacies have come to light as a result of the analysis of expenditures. Augmentation needs to overcome these deficiencies are discussed in the following sections and allowed for in the projections of costs.

Assumptions In the projections, increases in position count, in current expenses, and in equipment costs have been related directly to increases in FTE (see p. 24) student enrollment (Appendix Table 12). There is reasonably good logic for this approach as most university activities are either directly or indirectly related to instruction. This is also true in general for all facets of research and service, although some are more directly related than others. Because there is no ready-made criterion for determining the amount of research activity and public service which a university should undertake, it seems reasonable to assume that the total amount of research and service should be proportional to the size of the university which, in turn, is best measured by student enrollment. Within this broad framework, of course, adjustments will have to be made for the selective emphasis of those areas of research and service which are considered as best meeting the objectives of the University and the needs of the community.

In making position count and cost projections based on enrollment, it is assumed that the projections of FTE student enrollment are realistic. Although all significant variables were considered in making these projections, their accuracy can be assessed only with the passage of time.

In basing Personal Services cost projections on averages for broad categories, it is assumed that the ratios of the different levels of positions within those categories will not change appreciably.

One of the major unknowns in cost projections is the future magnitude of faculty and staff salaries. If the inflationary trend of recent years continues, salaries should increase to compensate for increased cost of living. In the case of Regents positions there is the additional factor of keeping abreast of mainland salary levels in institutions of comparable size in order to maintain a competitive position in hiring superior faculty. A detailed analysis of faculty and staff salaries in relation to local economic conditions and mainland levels is beyond the present scope of the Development Plan. For projection purposes it has been assumed the salaries of Regents positions will increase by 10 per cent every two years and that the salaries of Civil Service positions will increase by 5 per cent every two years. The salary increase for Regents positions is less than the 7.4 per cent per year recommended by President Eisenhower's Committee on Education beyond the High School Level.[1] However, the increase bolstered by fringe benefits such as professional travel, health and hospitalization benefits, and retirement allowances, is assumed to be adequate for maintaining a competitive position with mainland universities, although this assumption should be re-examined frequently in the future. The Civil Service salary increase should adequately cover anticipated increases in cost of living and, with fringe benefits, should maintain a competitive position with local business and industry in acquiring qualified personnel. Again, however, this assumption should be subjected to critical re-examination in the future.

In projecting Student Help, Current Expenses, and Equipment costs, an increase in the price index of 2 per cent per year has been assumed. This seems reasonable on the basis of past experience.

Although these projections are as good as can be made at the present time, their gross nature should be stressed at the outset. They can be accepted as establishing merely the order of magnitude of future requirements if present trends in enrollment and costs continue over the years, if research and service is to be undertaken in proportion to the size of the University and if the state wishes not only to maintain the *status quo* in higher education, but also to improve its quality.

Personal Services

Projections of position count, average salaries and costs of Personal Services are included in Appendix Table 20. Geared to student enrollment, the position count should have increased from 1,537 in 1962–63 to 1,730 in 1963–64. Instead, the actual position count in 1963–64 was 1,689, falling short by 41 positions. Geared to student enrollment, the positions in 1964–65 should number 1,907, representing a total increase over the actual count in 1963–64 of 218 positions. These initial projections assumed an adequate level of services in the base year 1962–63 and in 1963–64—an unjustified assumption. Some of the activities more obviously in need of strengthening are examined herewith so that a more adequate base for projections may be obtained in 1964–65.

Raising the Level of Services An inadequacy in the existing academic advising of freshmen and sophomores has been stressed earlier (p. 22); its rectification will require a slight reduction in the SFR (student-faculty ratio) which has otherwise been provisionally accepted as satisfactory at a value of 14.37 students to one faculty member. It has been strongly recommended that each lower classman should have the services of a specific faculty advisor, not only during registration period, but throughout the entire academic year. Estimates for the implementation of this system indicate that one faculty member giving one-quarter of his time to the job could efficiently handle the advising of 25 students on a continuing basis. Thus, one FTE faculty member could handle 100 students. Based on the anticipated FTE freshman and sophomore enrollment in 1964–65 in the College of Arts and Sciences, it is estimated that 24 FTE academic advisors would be needed. The requirements of other colleges should be considered in future years.

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[1] Instructional salaries in 41 selected colleges and universities for the academic year 1962–62. Subcommittee report, *AAUP Bulletin* 48 (1), March 1962.

Another inadequacy is that the Library is presently understaffed in technical help for cataloguing acquisitions. A large backlog of current materials presents a formidable obstacle to their use at a time when they are most needed. The necessary change from the Dewey-decimal to the Library of Congress indexing system creates still more complication and trouble which can be alleviated only by increasing the technical help to re-catalogue the existing volumes. Although some outside funds may be available for this huge task, additional positions supported by the state are needed. When re-cataloguing is completed these persons can be phased in to catalogue the additional volumes required to bring our Library up to the median level of collections of state universities of comparable size. Mechanization of circulation records, while requiring a few specialized positions, should reduce the need for additional personnel and student help in the future. To handle these special problems of the Library about 22 positions are needed in 1964–65 in addition to those needed for normal work load increase.

Additional secretarial help (stenographers, clerk-stenographers, and typists) is urgently needed, particularly in instructional departments and research agencies. In 1962–63 the ratios of professional (CI&R) positions to secretarial positions varied significantly among colleges. In Arts and Sciences the ratio was 16.26 to 1; in Business Administration, 6.36 to 1; in Education, 12.69 to 1; in Engineering, 6.45 to 1; in Nursing, 9.62 to 1; in Tropical Agriculture, 12.14 to 1. The ratios in the instructional departments, excluding the deans' offices, were considerably higher. A ratio of not more than 10 to 1 is needed to handle adequately the current work load. With the growth of the University and the inevitable delegation of more responsibility to deans and re-delegation of part of this responsibility to departmental chairmen, a vast increase in work load at the lower administrative levels has occurred without adequate personnel added to handle it. As part of the program to improve the quality of the University, the faculty is expected to devote part time to research and other scholarly activities which add to the secretarial load, yet little or no assistance is now available for the typing of manuscripts. For research agencies, the typing work load is especially high and a ratio of about 5 faculty members to 1 stenographer is considered desirable. As a first step toward establishing a minimally acceptable level of secretarial and clerical strength, it is estimated that 21 additional positions are needed in the instructional and research departments in 1964–65.

Other areas in need of strengthening over and above normal increases include the Office of the Vice-President for Business Affairs, to provide additional analysts to aid in preparing sound bases for budgets; the Business Office, to overcome irritating delays in the payment of bills for services; the Office of Publications and Information, to strengthen its job of communication; the Student Health Services, to provide an adequate level of service to the students; and the Honors Program of the University, which is in need of faculty positions for a fuller realization of its benefits to highly talented students. Altogether, a minimum of 17 positions are needed to bolster these activities in 1964–65.

The maintenance and operation of the physical plant require a large crew of specialized repair men, groundskeepers, and janitors. Although it is desirable to undertake a large portion of repair and maintenance by contract, utilizing the advantages of competitive bidding, an adequate permanent crew must be provided for operations and for emergency repair. An additional 28 positions should be added in 1964–65 to raise the level of current service.

Catch-up and Future Needs The positions needed to raise the level of current services in 1964–65 total 112. These have been added to the 1964–65 projections to form a new base which postulates a total increase of 330 positions over the actual 1963–64 count. A careful analysis of future work load increases and desirable expansion indicates that personnel needs can be met by projections geared to student enrollment, starting with the adjusted base for 1964–65. The resulting increases in faculty and staff should cover not only those needed in instruction to handle the increased general enrollment, new advanced degree programs, a proposed 2-year certificate program in nursing, and a proposed School of Basic Medical Sciences. The estimates also take care of the additional faculty and staff and needed for work load increases in current research and services and expansion as presently envisioned for agencies such as the Pacific Biomedical Research Center, the Hawaii Institute of Geophysics, the Social Science Research Institute, and others.

In assigning new positions as they become available, first priority should be given to instruction and instruction-related needs. Second priority should be given to research and services so that their growth is kept commensurate with the University's opportunities and responsibilities. A continuing review of University operations, especially in relation to more effective teaching techniques and possible savings from more efficient computer handling of "paper" work, may indicate that a satisfactory level of instruction, research, and service can be maintained with a staff increase somewhat less than proportional to enrollment increase.

Funds for student help are included in the cost projections of Appendix Table 20. Student help constitutes an important facet of personal services because they may be used to great advantage in many activities, such as typing, clerical work, laboratory assistance, temporary office assistants, delivery of equipment on campus, library work, etc. The cost is relatively low; the students derive not only the benefits of a small income, but they also profit from closer contacts with the faculty and staff, particularly when their work is associated with the scholarly activity of the professional staff. In many respects students derive greater benefits from part-time work than they do from tuition scholarships. As with faculty and staff position counts, it has been assumed that funds needed for student help will increase in proportion to increase in student enrollment. Provision has been made for moderate augmentation in 1964–65.

Current Expenses

If we are to assume that the 1963–64 budget for expenses ("B" funds) was adequate for the existing personnel, then these funds should increase in 1964–65 in proportion to the personnel required. This would bring them to $2.7 million. However, there are additional catch-up items in this category which are essential, and which should be added before a more adequate base for projection can be established. One of the greatest backlogs in operations is in the Physical Plant, where significant increases are required for utility costs, adequate telephone service, repair of breakage in buildings, and for repair and maintenance of refrigeration and air-conditioning equipment. Smaller but essential increases are required for library supplies, the Communications Center, the Institute of Geophysics, and for the various colleges and other units throughout the University. In all, at least $0.4 million in augmentation of costs for current expenses is required, bringing the 1964–65 base to $3.1 million. For subsequent years it is assumed that allocations for current expenses will be adequate if allowed to increase in proportion to student enrollment, allowing a 2 per cent cost increase per year. These projections are shown in Appendix Table 21.

Equipment

The deficiency in equipment ("C" funds) for current operations in numerous areas throughout the University is even more pronounced than that for current expenses. Hence, it is not realistic to use either the 1962–63 or 1963–64 budget as a base for projection. If the 1964–65 equipment budget were to increase merely in proportion to the required increase in personnel, about $1.1 million would be required, as compared to $0.9 million in 1963–64.

As noted in previous sections there are serious deficiencies in the library holdings. For the library and other needs directly related to instruction, the backlog amounts to about $0.3 million. All the colleges have a backlog of equipment needs for adequate instruction at the undergraduate level as well as for graduate instruction and research.

The various research organizations, some of which are less directly related to instruction, but which are all essential for development of Hawaii's economic base, have a serious "catch-up" need in basic modern equipment. To approach more nearly an adequate base in the Institute of Geophysics, the Hawaii Marine Laboratory, the Pacific Biomedical Research Center, the Hawaii Agricultural Experiment Station and the supportive Computer Center, approximately $0.25 million of additional augmentation will be required in 1964–65.

For general administration of the University many backlog items are required for more effective operation of the physical plant, since the University has grown much more rapidly than these needs have been met. For efficient operation, labor saving equipment is needed for the custodial services, as is motorized equipment for building and grounds maintenance, a motor pool, mail service, and security. A total of at least $0.06 million is required for these needs in 1964–65.

In all, these augmentation needs, required to approach an adequate base in 1964–65, will slightly exceed $0.6 million. Hence the total minimal equipment needs for 1964–65 will approximate $1.7 million.

Needs for future years can be expected to increase in proportion to student enrollment. While individual pieces of equipment are not always recurring items, rapid technological changes in engineering and in all the natural sciences require continual modernization if the University is to keep abreast of developments in these fields. Projections from the 1964–65 augmented base for equipment are shown in Appendix Table 21.

Summary of Operating Costs Operating costs, projected as described in the preceding sections, are summarized below:

(In Millions of Dollars)

Year	Personal Services (A)	Expenses (B)	Equipment (C)	Total
1962-63	11.7	2.0	0.7	14.4
1965–66	18.5	3.5	2.0	24.0
1970–71	33.6	5.4	3.1	42.1
1975–76	50.3	7.6	4.3	62.2

PROJECTIONS OF CAPITAL IMPROVEMENTS

This analysis of capital improvements in buildings and land is focused on the Manoa campus of the University, a 268-acre tract. The University holds other lands totaling 849 acres on the islands of Oahu, Kauai, Molokai, Maui, and Hawaii, on which are located the Hilo campus, agricultural experiment stations, demonstration farms, an observatory, and an arboretum. Building problems exist on some of these other lands also, but the most pressing needs are those on the Manoa campus and these will not be greatly affected by the solution of the building problems elsewhere.

The buildings of the University are intended, of course, to provide shelter from the climatic elements. Because of the variety of functions performed by a university there is a great range in the degree of sheltering required, the standards of construction which can be used and the utilities and furnishings that must be provided. On the Manoa campus there are more than 80 buildings, ranging in age from Hawaii Hall, the first erected in 1912, to newly completed buildings, which vary in construction from wooden shacks intended for temporary use to multi-story reinforced concrete buildings.

Most of these buildings are primarily academic in function. Some contain chiefly classrooms and faculty offices, some mainly laboratories for instruction or research, others house the Library, athletic activities, etc. Some of the buildings are devoted for the most part to administrative and service functions of the University. These include the administration building, the food service center, the student union building and the shops. Some, such as the dormitories and faculty residences, serve housing functions. Finally, some of the buildings house activities of the East-West Center, its administration and office buildings, its auditorium-theatre and its dormitories.

In this Plan main emphasis must be placed on floor space requirements for instructional, administrative, and service functions, because most of the costs of such space must be provided by state appropriation. Housing space is self-amortizing, or partially so, and does not require the same consideration. No special account is taken of the East-West Center space, because of its separate administration and financing.

To the calculation of floor space in buildings must be added consideration of outdoor athletic facilities, roads, walks, and parking spaces.

When evaluating building space, distinction must be made between gross floor space and net or assignable floor space. The gross floor space of a building is defined as the entire floor space within the exterior walls, including balconies where these serve as corridors. The net or assignable floor space excludes the walls, restrooms and janitorial space, and traffic areas. For University of Hawaii buildings in general, gross floor space may be estimated as 1.5 times assignable floor space, although this factor obviously varies considerably from building to building. For mainland universities the conversion factor may be materially higher because of the additional space needed for heating units, vestibules, etc.

Present Space

The gross floor space in buildings devoted to instructional, administrative, and service functions at the Manoa campus totaled 1,160,254 square feet in the fall of 1962 and 1,278,669 square feet in the fall of 1963 (Appendix Table 22).

Determination of the adequacy of this space is not a simple matter, for several reasons. First, the degree of adequacy has to be defined with respect not only to quantity but also to quality. Second, the degree of adequacy is quite variable from building to building and from function to function within the University. Third, there are no clearly defined norms by which adequacy may be measured objectively.

Quantitative Adequacy

From the quantitative standpoint the space available at the University of Hawaii can be described as inadequate in several respects, grossly so in some. One of the most visible lacks is in student study space. The study space available in the Library is crowded throughout the day, as are the few rooms set aside for study elsewhere on the campus. Students may be found trying to study sitting in their cars at any hour, or sprawled on the lawns when the weather is fair. At best, study under these conditions becomes ineffective, and in many cases it probably does not get done at all. Space for faculty offices is generally inadequate. Few professors have space for their personal working libraries and other academic tools. Fewer have sufficient privacy to conduct scholarly work or to encourage students to seek academic advising. Although some of the newer science laboratories used for both instruction and research are of proper size, older ones are completely inadequate. The Library has long since outgrown its space.

Such subjective and qualitative statements are of limited use in planning. The need, of course, is for quantitative parameters of either a specific or more general kind. The former would indicate in great detail each type of classroom or laboratory or other collegiate activity. The other sort would be in the form of an index which permits sufficiently reliable planning without regard to specific use of space. Such an index would serve to answer a variety of important questions: (1) If space is inadequate for only a few activities, how much change in space assignments would be necessary to correct the situation? (2) If over-all space is insufficient, how much extra should be provided? (3) If space is sufficient, at what rate must new space be added to keep up with growth in college population?

No theoretical formulae are available for calculating the amount of space required for effective performance in each function in a university. Furthermore, space requirements for various activities of a university are not directly related to any single base. However, for practical purposes the most important direct base for academic space is, of course, student enrollment. And the space requirements of many supportive functions, such as administration, are indirectly related to it. Thus, all computations of academic space in this Plan use student enrollment as a working base.

The Manoa campus figures for gross instructional, administrative, and service space (see Appendix Table 22) relate to student enrollment as follows:

	Fall 1962	*Fall 1963*
Total gross instructional, administrative, and service space, on Manoa campus (excluding EWC and housing), square feet	1,160,254	1,278,669
Fall enrollment, on Manoa campus, full-time equivalent students (FTE)	7,842	8,842
Gross space per student, square feet per FTE	147	144

Harland Bartholomew and Associates[2] have estimated space requirements per FTE in relation to national norms function by function and, for instruction, even field by field. From these figures they estimated the over-all space requirements assuming essential constancy in the ratios of students in the various fields and between various functions. Their estimates are summarized as follows.

Function	*Space requirements per FTE, square feet* *Assignable*	*Gross*
Regular instruction	47.1	70.7
ROTC	3.3	5.1
Library	15.0	22.5
Lounge-study	0.7	1.0
Research	10.0	15.0
Subtotal instruction and research	76.1	114.2
Administration	6.8	10.2
Physical plant	7.8	11.7
Union building	7.6	11.4
Auditorium	3.0	4.5
Subtotal administration and service	25.2	37.8
Total	101.3	152.0

The dependence of the Bartholomew method of estimating unit space requirement on norms for individual instructional fields, many of which are poorly documented, and upon assumptions as to the constancy of relative weights for different functions in the University, raises questions as to its validity for the University as a whole both for the present and in the future. Perhaps these questions are best answered, as was done in the Bartholomew report itself, by comparison of the University of Hawaii figures with the experience of other universities as to over-all space requirements.

Two sets of data compiled by Harland Bartholomew and Associates[3] are available for such comparison. One is based on a 1948 U.S. Office of Education survey of space needs of various types of institutions of higher learning estimated for 1950 on the basis of experience in 1940, the year of peak pre-war enrollment. The pertinent data are shown in Appendix Table 23. The average gross space requirement for all universities was 186 square feet per student and for public universities was 183 square feet per student. The equivalent assignable space figures are 124 square feet per FTE for all universities and 122 square feet per FTE for public universities. The second set of data was collected for the Bartholomew plan from universities that had adopted unit space requirement figures per FTE for planning purposes.

Gross space requirements per FTE student on main campuses of several public universities are plotted against student enrollment in Figure 8, together with recent actual figures for assignable space per FTE student at the University of Hawaii. As might be expected, the unit space figures show a wide range. To some extent the range is probably the result of differing criteria as to space to be included or different definitions of the FTE. Doubtless, it also reflects the differences in opinion as to suitable unit requirements as well as differences resulting from diverse balances between functions at the various universities.

The Bartholomew report notes that both the University of Illinois and the University of Wisconsin which, like the University of Hawaii, include colleges of agriculture, indicate large requirements per FTE student.

The figure also indicates that several of the large universities recognize that unit space requirements do not remain constant, but that with growth there is some increase in efficiency of space utilization which permits the space-to-student ratio to drop.

From the comparison afforded by Figure 8, and the consideration that the University of Hawaii includes an agricultural experiment station and laboratory elementary and secondary schools, it appears that the Bartholomew estimate of 101 square feet assignable space per FTE may become satisfactory as the University of Hawaii grows, but its adequacy will be minimal at best in the next decade. Moreover, the inadequacy of space at present is objectively demonstrable for the University as a whole.

Qualitative Adequacy

Present space is inadequate qualitatively as well as quantitatively. Certainly the poorest space comprises offices in temporary buildings with sagging floors, peeling paint, and heavy termite infestations. Of the total gross floor space in use in the fall of 1962, approximately 71,735 square feet (6 per cent) was in temporary buildings. In the fall of 1963 67,826 square feet (5 per cent) of such space was still in use.

Some of the older buildings of permanent construction fall far short of modern standards for both classrooms and offices. Even in the most modern buildings far too many inadequacies are apparent. Vastly improved liaison between architects and users can circumvent such problems in the future. Pre-architectural planning should be both encouraged and financed to provide greater assurance that future buildings will be planned for most effective use and still give a greater measure of flexibility for alternate uses.

Space Utilization

Part and parcel of an evaluation of the adequacy of space at the University is a thorough review of the measure of utilization of present space. In particular, the utilization of instructional space commonly comes under scrutiny, partly because instruction is the primary function of the university and partly because the character of a university's instructional program commonly leads to a lower rate of space utilization than that which obtains in elementary or high schools. The best test of

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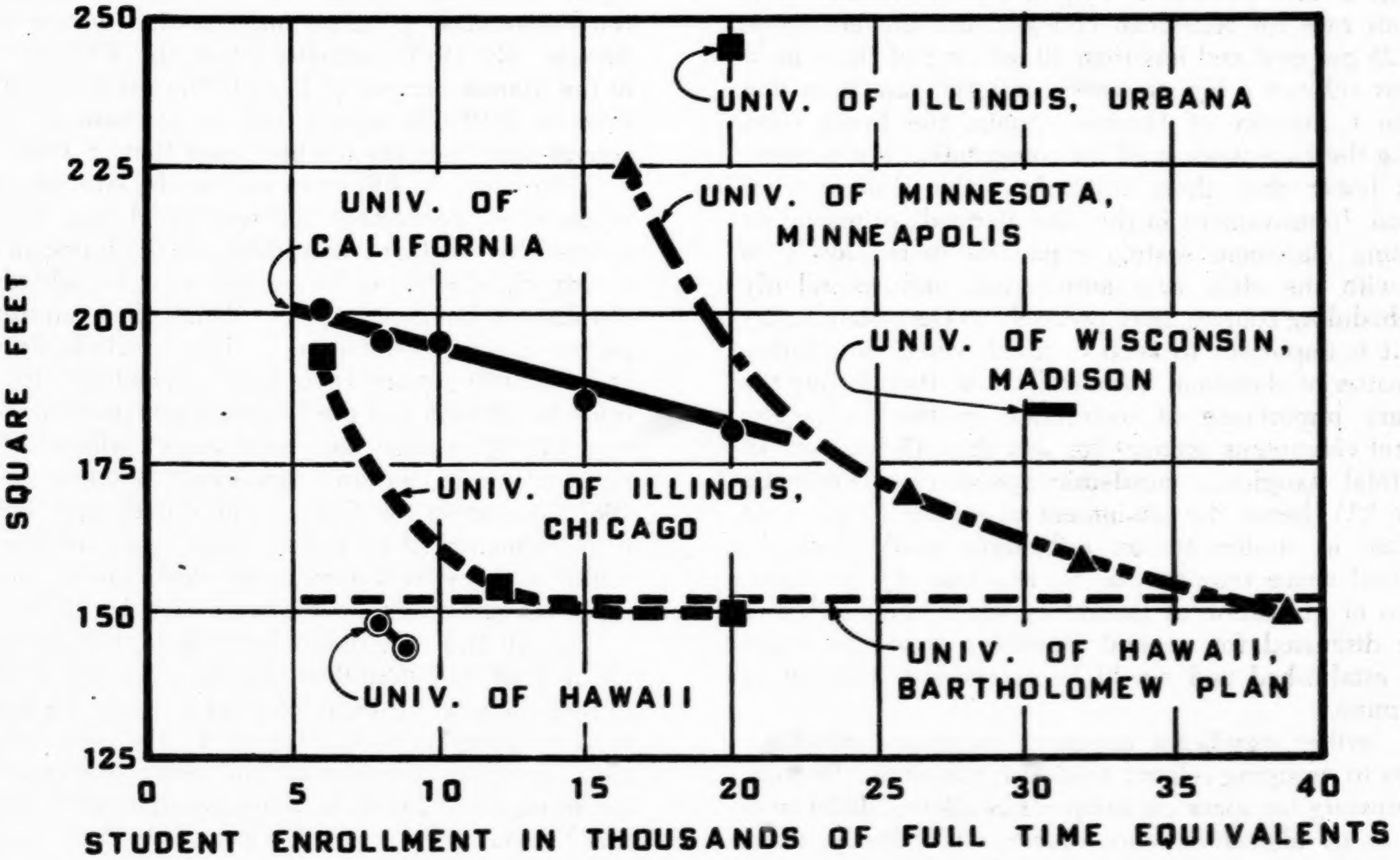
[2] Harland Bartholomew and Associates, *University of Hawaii General Campus Development Plan* (Honolulu, 1960).

[3] *Op. cit.*

FIGURE 8

ACTUAL AND PLANNED GROSS SPACE PER FULL TIME STUDENT FOR SELECTED UNIVERSITIES



the adequacy of use of classroom space in universities is to compare rates of utilization with national norms which are established by comprehensive surveys made by the U.S. Office of Education. The comparison may be made in two ways: (1) the utilization of whole classrooms or (2) the utilization of the seating capacity, or "student stations." The former index is the most useful in ascertaining over-all effectiveness in scheduling use of classrooms, the latter is a significant guide to planners as regards the capacity of rooms to be constructed. On the average, based on a 49-daytime-hour week, classroom utilization at the University of Hawaii was 66 per cent in the fall of 1962.[4] The median weekly rate in American colleges and universities is only 46 per cent, despite the fact that the week at some of these institutions is computed at only 40 to 45 hours. Less than 10 per cent of these American colleges and universities achieve higher room utilization rates than those of the University of Hawaii.[5]

An examination of the room utilization rate by hours during the day indicates that to achieve a significantly higher rate of room utilization will be a very difficult task. On Monday, Wednesday, and Friday, the average morning room utilization rate is 91 per cent; on Tuesday and Thursday mornings it is 79 per cent; only on Saturday does it drop significantly, to 52 per cent. Even during the noon hour the rate is 45 per cent. During the afternoons when most laboratories are in session, the average classroom rate on Monday, Wednesday, and Friday ranges from 90 per cent at 1:00 p.m. to 30 per cent at 5:00 p.m. on a gradual decline. On Tuesday and Thursday afternoons the average rate is 42 per cent. Some improvement can be made by transferring classes from Monday, Wednesday, and Friday to Tuesday, Thursday, and Saturday schedules, and from mornings to afternoons, and by scheduling more classes during the noon hour. Such changes inevitably lead to conflicts in curriculums, the resolution of which can be achieved only gradually and by the most carefully programmed machine computation. Ultimately there will be found an optimum average level of classroom utilization beyond which it will not be feasible to go because of decreased student option in courses.

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[4] R. W. Haselwood. Report on brief study of utilization of space at Manoa campus (University of Hawaii, September 1963).

[5] J. D. Russell and J. J. Doi, *Manual for Space Utilization in Colleges and Universities* (American Association of Collegiate Registers, Menasha, Wisconsin, 1957).

Improved student-station utilization might offer possibility for significant improvement both with existing physical plant and planned construction. On the basis of a 49-hour week, the average student-station utilization in the fall of 1962 was 32 per cent. In general, the variation through the week paralleled that of the classroom utilization, but the Monday, Wednesday, and Friday morning utilization averaged only 52 per cent. But these rates will not be easy to improve further. The median rate for American colleges and universities is only 25 per cent and less than 30 per cent of these institutions achieve a higher weekly average rate than that of the University of Hawaii. Again, the hours comprising the base week used for computation are in many cases fewer than those utilized at the University of Hawaii. Improvement in this case depends primarily on planning classroom seating capacities more closely in line with the class sizes anticipated, and secondarily on scheduling courses more precisely to classroom capacity. It is important to keep in mind, when considering the matter of classroom space utilization, that despite the primary importance of instruction in the University, general classrooms account for less than 15 per cent of the total assignable academic space (see Appendix Table 22); hence the attainment of even a 10 per cent increase in student-station utilization would decrease the total space requirement by less than 1.5 per cent. Norms of utilization of laboratory space comparable to those discussed for general classroom space have not been established and would be exceedingly difficult to determine.

A further significant comment on space utilization relates to grouping related academic functions. Because the pressure for space on campus has allowed little freedom in its allocation, departments with closely allied interests have been widely separated, and many departments have been split or otherwise have no spatial homogeneity. The departments of English and economics, the several foreign language departments, and the departments of plant sciences are examples. As space improvements are made, careful planning must go into the allocation of both new and old space so that the most effective grouping of functions can be achieved.

Projected Academic Space Needs

In estimating the costs of providing adequate building space for the expanding instructional, research, administrative, and service needs of the Manoa campus, we assume that the gross space index should at least equal the 152 square feet per full-time equivalent student standard used in the Bartholomew plan and discussed in the section on quantitative adequacy. This standard, to which the University must aspire during most of the period covered by this Plan, will actually be inadequate until the University roughly doubles its present size. Significant space deficiencies will thus continue to exist for several years unless some method for financing major construction at an accelerated rate is devised.

Because little can be done to change existing plans or new construction before 1965–66, the gross space for instruction, research, administration, and service has been estimated to 1965 and summarized in Appendix Table 24. The student enrollment at the Manoa campus, it is estimated, will by the fall of 1965 be 10,877 FTE. The space need determined from the standard of 152 square feet per FTE, will be 1,653,304 square feet. By then it is expected that the total gross space will be 1,517,637 square feet, leaving a deficiency of 135,677 square feet. This deficiency should be eliminated with the construction program implemented during the next decade. By 1975, estimates place the FTE enrollment at the Manoa campus at 19,410. The space required will then be 2,950,320 square feet, an increase of 1,297,016 square feet (roughly double) over that of 1965.

Temporary buildings in use on the campus must be replaced by permanent construction during the period covered by this Plan. In addition to the frame structures clearly classifiable as temporary must be added a few obsolescent buildings so located that they interfere with proper campus development. These include Farrington Hall (11,066 square feet, gross) scheduled for demolition in 1964–65 and the Engineering Quadrangle buildings (10,913 square feet, total gross) which should be replaced by a modern engineering building by about 1967. Including the Engineering Quadrangle buildings, it is estimated that 40,319 square feet of temporary building space will remain in 1965 which should be replaced with permanent construction by 1975.

Hawaii Hall, the oldest building on the campus, and Dean Hall will doubtless require extensive renovation during the next 10 years of a type similar to that presently in progress in Gartley Hall. Detailed figures for the gross space requirement and new space construction for instruction, research, administration and service on the Manoa campus for the period 1965–75 appear in Appendix Table 25.

In summary, the gross space to be added, and the gross space totals for the period are shown in Table 4.

TABLE 4

SUMMARY OF GROSS BUILDING SPACE REQUIRED ON THE MANOA CAMPUS TO 1975

	Space to be constructed, thousand sq. ft.	Total space required, thousand sq. ft.
Space requirements, Fall 1965 (10,577 FET's ex 152 sq. ft./FTE)		(1,653)
Actual space, Fall 1965		1,518
New space to remedy deficiency	136	
New space to replace temporary buildings	40	
New space equivalent of remodeling Hawaii and Dean Halls	35	
Total remedial, replacement and remodelling space, 1965–75	211	
Space required by increased enrollment, 1965–75	1,297	1,297
Total space to be constructed 1965–75	1,508	
Space requirements = actual space, 1975 (19,410 FTE's x 152 sq. ft./FTE)		2,950

Projected Costs of Academic Space

Experience in recent years indicates that the approximate unit costs of planning and construction for space serving various purposes may be expected, by 1965, to range from about $25 per gross square foot for several classrooms to $35 or more per gross square foot for laboratories, with a general over-all average of about $30 per gross square foot. These costs may be expected on past experience to increase, on the average, about 5 per cent per year. No attempt has been made to project space requirements and costs by function as the approximate costs can be developed by simply applying the appropriate average unit cost of planning and construction against the yearly per FTE gross space construction requirements. For the 10-year period, 1965 to 1975, the total requirement is 1,508 thousand square feet.

Funds for planning of buildings, amounting to about 15 per cent on the average of the planning plus construction costs, have been allowed in the year before that in which the building is to be constructed. Additional funds are required to provide furnishings and equipment for the building after it is completed. For Western public universities these have been calculated[6] to average 18.1 per cent of the construction cost. Details of the calculation of total planning, construction, and furnishing costs are presented in Appendix Table 26. In summary, the approximate costs of providing the required academic space are shown in Table 5.

TABLE 5

APPROXIMATE ANNUAL COSTS FOR REQUIRED ACADEMIC SPACE ON THE MANOA CAMPUS TO 1975

Year	$ million	Year	$ million
1964–65	4.567	1970–71	6.967
1965–66	5.678	1971–72	7.315
1966–67	5.967	1972–73	7.681
1967–68	6.233	1973–74	8.065
1968–69	6.357	1974–75	8.468
1969–70	6.636	1975–76	8.891

The principal usefulness of each annual figure is in indicating the general trend in building costs to cover the planning period. Costs of single buildings will vary greatly and alter the annual estimated amounts. Moreover, a building usually must be constructed as a unit, not in increments, so that in individual years the space costs may deviate either above or below the figures shown. Most importantly, the total building program should not lag behind the schedule shown. Retardation would result in penalties both in increased unit construction costs and in inadequate space and ineffective space utilization.

Housing Requirements

A thorough study of the housing needs on the Manoa campus has recently been conducted by Harland Bartholomew and Associates.[7] Their study was based on the policy objectives of providing housing for 50 per cent of the students away from home, 10 per cent of the married students, and 75 per cent of new faculty members during their first year. Toward these objectives the planners recommended the provision of accommodations as follows, by number of units.

	Existing 1963	*1964–1975*	*Total*
For single students	684	2,400	3,084
For married students and faculty	48	220	268

Although the initial development of both student and faculty housing has required appropriations by the state, faculty housing is now expected to become self-amortizing and, according to Harland Bartholomew and Associates, student housing should likewise become self-liquidating. Detailed consideration of the housing problem is not integral to academic development planning and, assuming that self-amortization of all housing is possible, it needs no further consideration in this report.

Outdoor Athletic Facilities Required

In the over-all development of a campus the provision of outdoor athletic facilities, such as tennis courts, playing fields and tracts does not represent a large fraction of the cost, although the facilities do occupy appreciable space. The athletic facilities of the Manoa campus have in the last few years been moved entirely to the former quarry. These facilities are scheduled for expansion over a three-year program starting in 1964–65, the costs of which are estimated at about $250,000 per year (see p. 77). We assume that no major expansion of the outdoor athletic facilities will be required from 1968 to 1975.

Roads, Parking, Drainage, and Utilities Required

The development of a perimeter road and major branches, nearing completion in 1964, makes any large investment in roadways appear unlikely to be necessary before 1975. Similarly the development of a major drainage system in 1963–64 makes improbable any further major expenditures for drainage. As new buildings are built, access roads and walks will have to be provided, drainage systems will have to be extended and utilities systems extended and modified. For such work, $100,000 per year will probably be an adequate average allowance for the period until 1975.

The development of adequate parking will be much more costly. Austin, Smith, and Associates and Harland Bartholomew and Associates[8] in a study of parking problems have recommended that parking be provided for 31 per cent of the student body, 81 per cent of the faculty, and 74 per cent of the staff (80 per cent of student vehicles and 90 per cent of faculty and staff vehicles). This schedule would require 9,300 parking spaces by 1978, some 7,200 more than exist at present. Part of these spaces would have to be in parking garages. The provision of these parking spaces will involve, according to the study, the expenditure of over $11 million. However, the consultants recommend the adoption of a parking fee schedule which will make all parking self-supporting. On the assumption that this recommendation will be adopted, only an initial appropriation of $120,000 in 1964–65 is included in our estimate of capital costs.

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[6] E. E. Higgins and L. L. Wright. *Ratio of Equipment Investment to Building Investment*. College and University Facilities Series, Department of Health, Education and Welfare, June 1963.

[7] Harland Bartholomew & Associates. *University of Hawaii Housing Study*. Report to Hawaii Department of Accounting and General Services, 1963.

[8] Austin, Smith, and Associates and Harland Bartholomew and Associates. *University of Hawaii Manoa Campus, Traffic and Parking Study: Part I, Parking*. Report to Department of Accounting and General Services, 1963.

Miscellaneous Capital Improvement Required

In addition to the major expenses for buildings, roadways, drainage, utilities, parking, etc., there are every year a number of relatively minor expenses incurred in modifications of buildings. These are expected to average between $100,000 and $250,000 per year, probably generally increasing with the increase in enrollment, faculty, and buildings.

Capital Improvement Budget Projections

It appears that the sum of the costs of outdoor athletic facilities, roads, drainage, parking and miscellaneous capital improvements will be about $600,000 in 1964–65. Although it is assumed that parking costs will not be borne by state appropriation after 1964–65, and although no plans exist for the expansion of the athletic facilities beyond 1967, the miscellaneous capital improvements should be expected to increase, on the average, and to allow for this as well as to cover contingencies, it seems best to continue to allow $600,000 annually for all capital improvements exclusive of the academic space itself. With this allowance added to the costs of the academic building program already outlined, the total estimated capital improvement budget is shown in Table 6.

TABLE 6

ESTIMATED TOTAL ANNUAL CAPITAL IMPROVEMENT BUDGET FOR THE MANOA CAMPUS TO 1975

Year	$ million	Year	$ million
1964–65	5.168	1970–71	7.567
1965–66	6.278	1971–72	7.915
1966–67	6.567	1972–73	8.281
1967–68	6.833	1973–74	8.665
1968–69	6.957	1974–75	9.068
1969–70	7.236	1975–76	9.491

Land Requirements, Campus Development and Building Planning

The adequacy of the Manoa campus for a student enrollment of 22,688 (19,410 FTE) forecast for 1975–76 is problematical. Harland Bartholomew and Associates[9] considered that the campus was "adequate to accommodate the buildings, services and facilities necessary to support student enrollment of 18,000. However, the areas provided for parking, and to some extent for outdoor service yard areas and playing fields, are minimal." It is reasonable to anticipate that with a larger student enrollment the land areas provided for these subsidiary functions will be subminimal if they have to be contained within the existing campus.

There is no question that after 1975, if not before, additional land will have to be procured adjacent to the Manoa campus if the growth of the University is to be restricted only by efficacy of operations rather than limitations of space. An estimation of the amount of additional land required is beyond the scope of this academic development plan. However, this estimation, and the most efficient use of the land available on the campus, will be the subject of an intensive study of campus development now underway.

The needs for a physical development planning will not be ended with the completion of the study mentioned above, but will continue as the actual development occurs and as gradual changes in the relative importance of the various programs of the University occur. Close and continuing coordination between academic needs and physical plant construction and modification are essential, and cannot satisfactorily be provided by spasmodic surveys, nor initiated satisfactorily outside the campus. Thus both academic and campus developmental planning must be continuing processes.

In the design of the buildings themselves, it is absolutely necessary that there be better coordination between the consulting architects and engineers, the physical plant personnel of the University, and the users of the buildings. Brewster[10] states the case clearly:

> For years I have heard architects criticized for their shortcomings in connection with their work on college and university buildings. All of us have had experiences which have at times made us critical of the profession. However, I have reached the conclusion that a goodly share of the fault lies with the institutions. In too many cases too much responsibility is given to the architect and not enough responsibility is assumed by the school. In too many cases the architect is not given the information necessary to design a building to properly serve the functions that will be housed there. . . . In too many cases the staff and operating personnel are not given the opportunity, or sufficient time, to properly review preliminary drawings before the architect is authorized to proceed with working drawings. . . . In too many cases final plans are put out to bid without careful checking by qualified university personnel. . . .
>
> I am a great believer in and admirer of the architect. The architect does some truly wonderful things. However, I believe an architect should be given a

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[9] Harland Bartholomew and Associates. University of Hawaii. *General Campus Development Plan* (1960).

[10] S. F. Brewster. *Programming, Planning, and Construction of College and University Buildings.* (Paper presented to National Association of Physical Plant Administration of Universities & Colleges.) Brigham Young University, Provo, Utah (1963).

carefully worked out program of requirements to review before he signs the contract. I further believe that his work and progress should be carefully reviewed at proper times during the planning stages by qualified university personnel. Speaking bluntly, I feel that the school should get what it wants and needs with the considerable help of the architect, and not largely what the architect feels the school should have. This places a lot of responsibility on the school because intelligent programming, critiques, and architectural and contractual assistance are the results of organization and proper use of qualified staff.

Brewster recommends the establishment of a strong central campus planning office in or closely coordinated with the department concerned with the administration of the physical plant. Such an office should be established under the Vice-President for Business Affairs at once so that the building program of the University can develop in an orderly and well-conceived manner.

RESOURCES FOR FINANCING HIGHER EDUCATION IN HAWAII

The growth and development of the University as described in this study calls for a heavy investment by state, federal, and private resources. Is this Plan financially possible? Although an entirely precise answer is not to be expected, programs planned for public endorsement must be accompanied by rational considerations of their financial feasibility. Thus the material to follow is a first appraisal of some of the potentialities of various sources of public and private finance to meet the needs of higher education in Hawaii.

To provide a broad perspective, an attempt has been made in various ways to compare Hawaii's index of expenditures on higher education with the record of the other states. Following this analysis, sources of funds for higher education in Hawaii have been examined, including the state's general appropriation to the University, the proportion of total costs defrayed by tuition and fees paid by students, and finally the role and extent of financial support from the federal government and private philanthropy.

Comparison of Expenditures on Higher Education Between Hawaii and Other States

No university, public or private, ever has sufficient funds to accomplish its goals either to its own complete satisfaction or to the satisfaction of its constituency. However, in the realm of public education it is important for each state to know the relative extent of its contribution. Such knowledge can serve as a guide to tax legislation in general and to educational appropriations in particular, and also provide an index showing the state's development of its human resources.

How exactly to measure and evaluate the sufficiency of state's support of higher education is an intricate problem. The question is complicated because of the infusion of other types of support, as from the federal government, student tuition and fees, and private giving. However, various available statistical indices do permit a general comparison of Hawaii's level of expenditures on higher education with the appropriations of other states. These comparisons must not be regarded as providing definitive answers to the question of the adequacy of Hawaii's commitment. There are many varying conditions and different educational needs among the several states, imposing in each state a somewhat different order of priorities. Nonetheless, the indices are informative. They should help at least to suggest, if not specifically establish, important bench marks for measuring budgetary adequacy in Hawaii.

Per Capita Expenditures for Higher Education Table 7 summarizes per capita expenditures on public institutions of higher education in Hawaii and various other states segregated by geographic regions.

While Hawaii's per capita expenditures on public higher education (whether total or current) average only slightly lower than those of the United States as a whole, they are significantly lower than such expenditures in the states comprising the three Western regions. The United States average is reduced appreciably by the low per capita expenditures of the three Eastern regions. Private institutions of higher learning were established in the Eastern states at a time when higher education was exclusively the responsibility of private groups. Because of their early establishment and venerable age, as compared to institutions of higher education in the remainder of the United States, these older American colleges and universities have had time to build over the years a tradition of support and to accumulate substantial endowments and other resources.

Accordingly, the Eastern states (and to a lesser extent the states in the Plains and Great Lakes regions) have private funds and facilities for higher education which substantially supplement those provided from public resources for higher education (see Table 8, column 3). The most relevant comparison for Hawaii thus is with the newer Western states, where public support for higher education has been considered not merely incidental but a very desirable and indeed a major function of local and state government.

Per Student Expenditure for Higher Education Another significant indicator is the expenditure (or cost) of public higher education per student enrolled. Total expenditures and current expenditures, as defined in footnotes 12 and 13 of Table 7, are divided by total enrollment to get the figures shown in Table 8. The figures on public enroll-

TABLE 7

PER CAPITA EXPENDITURES FOR HIGHER EDUCATION IN HAWAII AND OTHER STATES

Area	Per capita expenditures on public higher education: On total expenditures 1960-61	On current expenditures, 1961-62
Hawaii	$20	$12
Far Western States	35	23
Rocky Mountain States	33	20
South Western States	28	18
Plains States	24	16
Great Lakes States	22	15
South Eastern States	15	9
Mid-Eastern States	14	8
New England States	15	10
Average of 8 Regions	$23	$15

TABLE 8

EXPENDITURE PER STUDENT FOR HIGHER EDUCATION IN HAWAII AND OTHER STATES

Area	Per student expenditure on public higher education: On total expenditures, 1960-61	On current expenditures, 1961-62	Percentage of total students enrolled in public institutions of higher education, 1960
Hawaii	$1,119	$ 711	92
Far Western States	1,981	1,267	90
Rocky Mountain States	1,843	1,063	82
South Western States	1,317	892	85
Plains States	1,549	1,031	70
Great Lakes States	1,654	1,084	64
South Eastern States	1,475	877	66
Mid-Eastern States	1,521	983	50
New England States	1,583	1,030	43
Average of 8 Regions	$1,588	$1,028	69

Per capita expenditures are obtained by dividing expenditures by total population.

Governmental Finances in 1961, U.S. Bureau of Census, 1962. Total expenditures include both current and capital expenditures made by state and local governments. Agricultural extension and commercial activities are excluded.

Compendium of State Governmental Finances in 1962, U.S. Bureau of Census, 1963. Excludes capital expenditures and local government expenditures on public higher education. As an index, current expenditures tend to be more stable from year to year, since capital expenditures are highly unstable. Accordingly, both measures are computed in Tables 7, 8 and 9.

The averages for each region and for all eight regions in this and subsequent tables are unweighted means. Means weighted, e.g., by the size of expenditures will give undue influence to the larger universities. Such means may not be appropriate bench marks for the University of Hawaii.

Expenditure data from sources cited in Table 7.

Enrollment data from *Facts and Figures on Government Finance*, 12th Edition, 1962-63.

TABLE 9

RELATIONSHIP BETWEEN EXPENDITURES FOR PUBLIC HIGHER EDUCATION AND TOTAL PERSONAL INCOME IN HAWAII AND IN OTHER STATES[17]

Area	Expenditure on public higher education as a percentage of personal income	
	On total expenditures, 1960-61[18]	On current expenditures, 1961–62[18]
Hawaii	0.8	0.6
Far Western States	1.4	1.0
Rocky Mountain States	1.6	1.0
South Western States	1.3	0.9
Plains States	1.2	0.8
Great Lakes States	1.0	0.6
South Eastern States	1.0	0.6
Mid-Eastern States	0.5	0.3
New England States	0.7	0.4
Average of 8 Regions	1.1	0.7

ment in the various regions (column 3) reflect the enormous regional differences in the availability of private facilities for higher education. Among all states Hawaii provides the least amount of private facilities for higher education.

Unfortunately, enrollment is not defined adequately in the source of the data presented, and considerable variation in the manner of compilation of statistics used from state to state is possible. But the differences shown between Hawaii and most of the states on the mainland are so great that they leave not the slightest doubt that Hawaii's per student expenditure for higher education is well below that of all other regions. This conclusion is further substantiated by data from another authoritative source (*Statistics of Land-Grant Colleges and Universities*, 1960, U.S. Department of Health, Education and Welfare, Washington, D.C.), which shows that the per student expenditure in 1960 of 52 land-grant colleges was 50 per cent higher than that for Hawaii.

Expenditures for Higher Education Related to Personal Income

Another useful indicator relates the expenditures of public institutions of higher education to the total personal income of each state, the latter representing approximately the productive power of the individual state. Table 9 summarizes this relationship.

Excluding the Eastern states (on the basis of extensive private support to higher education and correspondingly decreased need for public support), Hawaii's spending on higher education relative to its total income falls well below that of other states, and reaches just slightly over half of the index for the Western states.

Despite the imperfections in these data, all three indices tell a remarkably similar story. Judging by mainland standards, we cannot escape the conclusion that higher education in Hawaii has not received adequate financial support. During fiscal year 1963 the substantial increase in the operating budget of the University helped somewhat to close the big gap, inasmuch as the relative increase in the budget over fiscal year 1962 was greater than that for the nation as a whole during this same year. This encouraging rate of increase was not, however, sustained in fiscal year 1964.[19] Thus, despite some narrowing of the gap in recent years, Hawaii still has a long way to go to reach the level of support being provided higher education in the Western states.

State Appropriations for Financing Higher Education

Because it is impossible to predict what changes may occur in the tax structure and rates of the state, computations and analyses made herein are based on the unlikely assumption that the present structure and rates will remain substantially unaltered. On this basis, by projecting total personal income to 1975, it is possible to calculate the approximate extent to which total tax revenues of the state will rise in future years. Because there is a rather constant relationship between personal income and tax revenues (given the assumptions of an

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[17] Expenditure and personal income data from sources cited in Table 7.

[18] Personal income for column 1 relates to calendar year 1961, and for column 2 to an average of calendar years 1961 and 1962.

[19] Hawaii data from the various *Financial Reports* of the University of Hawaii. Mainland data from the *Survey of Current Business*, July 1963, U.S. Commerce Department.

TABLE 10

Projected Estimates of Hawaii's Personal Income, 1962–1975, *Assuming No Change in Prices*

Year	Total[20] Population	Labor force[21]	Personal income per worker[22]	Total[23] personal income ($ millions)	(Index)
1962	679,000	294,000	$5,400	$1,588	100
1965	717,000	308,000	5,700	1,760	111
1970	767,000	329,000	6,300	2,070	130
1975	818,000	351,000	7,000	2,460	155

unchanged tax structure and substantially unchanged industrial structure of Hawaii), it is possible to make such projections.

Total Personal Income Projections Total personal income up to 1975 has been projected and summarized in Tables 10 and 11. The method used for these computations is the commonly accepted one in which per capita income in the base year (1962) is projected by an assumed annual increase in per capita income. Projected per capita income is then converted to total personal income by estimating the size of the labor force for future years. Estimated total personal income then forms the basis for projecting the total tax revenue of the state (Table 12).

In Table 10, projections of the Department of Planning and Economic Development are shown together with estimates of the labor force. These estimates were obtained by the Department of Planning and Economic Development by applying the proportion of labor force to population in the base year 1962 to population tables for 1965, 1970, and 1975. Income per worker in the labor force for 1962 was obtained by dividing total personal income by total population in that year. The 1962 income per worker is raised by 2 per cent annually to accommodate increases in productivity and earnings. This percentage is based on the increases in per worker earnings in Hawaii achieved between 1951 and 1962 (deflated for price increases). The labor force multiplied by income per worker provides the information shown in the last column. From these data it appears that the 1975 personal income in 1962 "dollars" or 1962 prices will probably be about 50 per cent greater than that prevailing in 1962.

The projection in Table 10 makes no allowance for price increases during the next decade. Since economists generally expect prices to continue to rise (this expectation is incorporated in the cost projections in this Plan), an allowance for varying price rises is made in Table 11. Unlike productivity changes, price changes are difficult to predict. Accordingly, the increases assumed in Table 11 may vary somewhat.

The Honolulu Consumer Price Index between 1952 and 1962 increased by 23 per cent or 2.3 per cent (arithmetically) annually. If this rate should continue, the estimates in column 2 of Table 11 may approximate the situation in 1975. Column 2 indicates that under this assumption total personal income during the 13-year period 1962–1975 will about double.

TABLE 11

Projected Estimates of Hawaii's Personal Income, 1962–1975, *Assuming Rising Prices* (in Millions of Dollars)

Year	Price rise by 1 per cent each year	(Index)	Price rise by 2 per cent each year	(Index)	Price rise by 3 per cent each year	(Index)
1962	$1,588	100	$1,588	100	$1,588	100
1965	1,810	114	1,860	117	1,910	120
1970	2,240	141	2,410	152	2,570	162
1975	2,780	175	3,100	195	3,420	215

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[20] De facto (January 1st) population including military personnel stationed ashore. Based on estimates of the Department of Economic Development, State of Hawaii, "Population Projections for Hawaii, 1963–1983," May 24, 1962.

[21] Data from source in footnote 20.

[22] Income per worker in 1962 is raised by an assumed 2 per cent per year increase (compounded) in the Hawaiian productivity per worker. Data for 1962 from the U.S. Commerce Department's *Survey of Current Business*, August 1963.

[23] The product of figures in the two previous columns and rounded off.

Projected State General Fund Tax Revenues

The three series shown in Table 11, together with the constant-price series summarized in Table 10, permit four different projections of personal income in Hawaii. When each of these is applied to the state's general fund tax revenues, which totaled $97.4 million in fiscal year 1962, estimated projections of the state's tax revenue in future years are produced, which are summarized in Table 12.

These projections are based on what appears at the present time to be reasonable assumptions. They assume that unemployment and military expenditures will remain at about the present level, that productivity will rise at a rate close to that during the past decade and (not hazarding a guess as to the state's future fiscal policy or needs) that the tax structure and rates as well as the structure of industry will not be substantially altered. On these assumptions, and given an annual price rise of 2 per cent, it can reasonably be expected that tax revenues of the state will approximately double between 1962 and 1975.

State Commitment to Higher Education

The crux of the University's future growth and development is largely dependent on the answer to the question: in the years ahead *should* the state devote a greater amount of its revenues to higher education? The decision on such a fundamental issue is the responsibility of the state Legislature. The University's contribution toward the decision making process requires primarily the presentation and justification of program requirements for the institution's proper growth. In addition, by appropriate analyses, it is possible to provide perspective on the question of public support of higher education by comparing Hawaii's effort with that of other states.

In recent years the state's contribution to the University's total budget (current expenditures) has risen at a rate about equivalent to the national average. During the period 1957–1962 total public expenditures for higher education exactly doubled in the United States.[b] Despite this favorable recognition given the University during the past few years, the state's actual commitment to higher education has not yet reached the level of most other states. Hawaii's continued lower level of support, notwithstanding the approximate doubling of the University's budget during the past 5 years, can be ascribed largely to the smaller and highly inadequate base from which we began our proportionately increased recent support.

Perhaps the most instructive method of evaluating Hawaii's commitment to higher education is to compare the share of the state's tax revenues appropriated in support of its University with that allocated by other states for theirs. For purposes of this comparison, the state's commitment to higher education is that part of its total tax revenues of the state which finances the University's total budget. This part, computed as a proportion of the total tax receipts, may be termed the state's "commitment percentage."

Strictly comparable statistics for the 50 states on the commitment percentage are not available. The problem lies in the complexity of interrelated sources of funds in a university's budget, and the difficulty of isolating the state's contribution from that of the federal government, private endowments and students' fees and tuition. The figures presented herewith represent the nearest approximation possible. From the total expenditures on public higher education have been deducted: (1) expenses of commercial or auxiliary activities (which are largely financed by charges and fees); (2) capital expenditures (which are largely financed by federal and borrowed funds); and (3) revenues from tuition and student fees. The residual costs represent current expenditures financed *largely* out of state tax receipts. It is assumed that only a small part of the residual costs are financed from federal funds and that this portion does not vary percentage-wise sufficiently to affect appreciably the comparisons made among the states. These residual costs, used here to illustrate the best available approximation of the commitment to current expenditures from state tax revenues, are shown for Hawaii and regions of the mainland in Table 13.

TABLE 12

PROJECTED ESTIMATES OF STATE GENERAL FUND TAX REVENUES, 1962-1975, ON VARYING ASSUMPTIONS (IN MILLIONS OF DOLLARS)

Year[a]	No change in prices	(Index)	1 per cent rise in prices	(Index)	2 per cent rise in prices	(Index)	3 per cent rise in prices	(Index)
1962	$ 97.4	100	$ 97.4	100	$ 97.4	100	$ 97.4	100
1965	108.1	111	111.0	114	114.0	117	117.1	120
1970	126.6	130	137.4	141	147.8	152	157.5	162
1975	150.9	155	170.5	175	190.1	195	209.8	215

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[a] State General Fund revenues for 1962 are for fiscal year 1961-62. From the total of $163,500,000 as given in the *Report of the Controller*, 1962, was deducted "revenues appropriated," "receipts off-setting outlay payments," and "other revenues," leaving $97,400,000.

[b] See *Survey of Current Business*, U.S. Department of Commerce, July 1961 and July 1963. The absolute figures are $1.7 billion in 1957 and $3.4 billion in 1962.

TABLE 13

Public Commitment to Costs of Current Expenditures of Higher Education in Hawaii and Other States

Area	Commitment to higher education as a percentage of tax revenues, 1961–62	
	Total state revenues[26]	State and local tax revenues[27]
Hawaii	4.5 per cent	3.7 per cent
Far Western States	13.6	8.8
Rocky Mountain States	13.4	7.4
South Western States	10.0	5.5
Plains States	13.3	5.8
Great Lakes States	10.4	5.0
South Eastern States	6.7	4.0
Mid-Eastern States	5.0	4.0
New England States	6.2	3.1
Average of 8 regions	9.8	5.6

Besides certain defects in the data noted above, state commitment data shown in Table 13 fall short of total contributions to higher education from state tax revenue in two respects. First, these figures do not include agricultural extension services and experimental stations, although portions of the budget of both activities are financed from state tax funds; and, second, they exclude equipment purchases. It is not likely, however, that adjustments for these defects would alter the main relationships shown in the Table.[28]

Hawaii's commitment to higher education unquestionably is substantially lower than those for states in the three Western regions and in the Plains and Great Lakes areas. Taking into account the upward bias in the mainland figures in column 1 and the downward bias in column 2 (as explained in footnote 27), it is evident that Hawaii's commitment to higher education is about one-half that of the states of three Western regions taken together.[29] As noted earlier, the three Eastern regions can be justifiably excluded from the comparison because of the relatively greater supply there of facilities and operational support for privately financed higher education.

Such a gap in commitment is understandable on historical grounds. Hawaii's major economic and industrial development falls almost entirely within the 20th century, much of it having been concentrated in recent decades. As a comparatively newly industrialized region, Hawaii has made a pace-setting record in some areas of community life. But much remains to be accomplished to bring the rising mainland standards of quantity and quality in state services to Hawaii's citizens. Public demands have been increasing slowly during the past few decades, but with the coming of statehood these pressures have been increased. Appropriately, additional financial support has been concentrated on government programs which were initially more critical, such as health, safety, general administration, and elementary and secondary education

During the next several years, however, the *relative* urgency of some of these important earlier needs may be expected to decline, with the demand for expansion of services becoming relatively less than is the case for higher education. For example, the average yearly increase in enrollment in the elementary and secondary schools is expected to fall from about 5,000 during the decade 1953–1963 to about 1,000 to 2,00 during the next decade. Specialists in state and local finance do not expect public demand in certain services—general administration, welfare, conservation of natural resources, water and sanitation, police and fire protection, transportation—to increase in the coming decade at the same rate as in the past.[30] Reasons for these changing requirements are various, always influenced of course by local factors. In general, however, there appears to be taking place a relative saturation of many needs. Communities are catching up with their backlog demands. There is a slowing down of the urbanization process. The population increase is less rapid. In sharp contrast, authorities expect the public demand for higher education to rise very markedly because of swelling enrollments.[31]

A significant trend of great predictive value for higher education appears in recent statistics showing the total expenditures of all state and local governments in the United States. From 1952 to 1957 the proportion annually spent on higher education did not change. However, the proportion appropriated each year for elementary and secondary education increased during this five-year period by about 15 per cent. But since 1957 the demand for higher education began to assert itself strongly. Since that time the proportion of total state and local expenditures on higher education has been rising rapidly, while the proportion spent on elementary and secondary education has remained steady at the 1957 level.[32]

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[26] Data for computing "commitment" as described above and on state tax revenues is from *Compendium of State Governmental Finances in 1962*. U.S. Bureau of Census, 1963. State and local tax revenues from *Governmental Finances in 1961*, U.S. Bureau of Census, 1962.

[27] The state commitment to higher education is computed as a proportion of the sum of state and local taxes in column 2, even though local government does not support higher education in Hawaii. Thus, the percentages shown in column 2 represent all tax revenues applied to higher education, with the comparatively lower commitments shown in column 2 the result of adding local tax revenues to state revenues.

[28] For 1959-60, it is possible to isolate the state tax portion of 52 land-grant institutions, using the data from *Statistics of Land-Grant Colleges and Universities, June 1960*, U.S. Department of Health, Education and Welfare, Washington, D.C. Though the data confined only to land-grant institutions are not sufficiently comprehensive, the results fully support and conclusions in the text and are consistent with the table above.

[29] A similar conclusion is obtainable from Table 103 of *University of Hawaii and Higher Education in Hawaii, Report of a Survey*, S. V. Martorana, E. V. Hollis, and staff members of the U.S. Department of Health, Education and Welfare. But the concept used there appears to be too broadly based, since it relates all costs of public higher education to all revenues of the states.

[30] See *Public Finances: Needs, Sources and Utilization*, A Conference, National Bureau of Economic Research (New York, 1961).

[31] See e.g., S. Harris, *Higher Education, Resources and Finances*, Chapter 2 (New York, 1962).

[32] Based on data taken from the U.S. national income accounts, *Surveys of Current Business*, U.S. Department of Commerce, July 1961 and July 1963.

TABLE 14

RELATION OF TUITION AND FEES TO BUDGETS OF STATE-SUPPORTED INSTITUTIONS OF HIGHER EDUCATION, 1961–1962[25]

Area	Receipts from tuition and fee as a percentage of budgets. Of total expenditures	Receipts from tuition and fee as a percentage of budgets. Of current expenditures
Hawaii	11.3 per cent	25.7 per cent
Far Western States	10.0	14.7
Rocky Mountain States	14.8	21.0
South Western States	17.8	25.0
Plains States	17.4	25.7
Great Lakes States	18.0	25.1
South Eastern States	17.1	25.1
Mid-Western States	17.8	28.3
New England States	20.4	30.8
Average of 8 Regions	16.7	24.2

Much depends on whether trends in the mainland pattern of demand for public services during the coming decade *are reflected in Hawaii, where it is reasonable to* expect some alteration, such as in sharply rising expenditures for highways. In any event, the rising aspirations of the college-age group in Hawaii, as analyzed elsewhere in this report, clearly indicate that an increasing proportion of state tax revenues will have to be appropriated in the future to keep pace with the strong demand for higher education.

Financing Higher Education from Tuition and Fees

Difficulties in obtaining funds necessary to meet the needs of the University of Hawaii, as projected in this report, must be anticipated. Even with the help of a larger proportionate share of an expanding volume of total state tax revenues, the spiraling demands of higher education will not in coming years be satisfied without increased supplementary support. Consequently, other aspects of the University's financial base must be analyzed.

A substantial segment of the budget of public institutions of higher education has traditionally been met by tuition and fees. The critical issue on this score in Hawaii is how much of the cost of their University education should be borne by the students. No one doubts that the benefits of higher education accrue both to society in general and to the individual recipients of higher education. S. E. Harris estimates that today's average university graduate receives material gains over and above the high school graduate of about $100,000 during the course of a lifetime.[23] But it is manifestly impossible to estimate even roughly the material benefits of higher education to society, much less the cultural benefits. Therefore, it is impossible to allocate equitably the cost of higher education between the state and the students.

Hawaii–Mainland Comparison of Tuition and Fees

Using as a basis the tuition and fees paid by full-time students, it is possible to compare Hawaii's student contribution to the costs of higher education with that of state-supported institutions on the mainland. In comparing Hawaii's level of tuition and fees with 24 Western institutions and 31 non-Western institutions for 1960–61, it is evident that Hawaii's tuition rate is approximately 20 per cent above the mean rates for Western universities and about equal to the mean rates for other areas.[24] Somewhat similar results were noted when total receipts from tuition and fees were related to (1) total expenditures (including current and capital) of state-supported institutions of higher education and (2) to current expenditures (Table 14).

The percentages shown in Table 14 measure the share of the total budget and, alternatively, of the current expenditures budget borne by students. The figure should be scrutinized very carefully, for they indicate the significant portion in the form of tuition and fees paid per student in relation to the volume and quality of higher educational services he receives. In budgetary terminology, these are the costs of "current services." Thus, data on relative tuition and fees helpfully complement data on per student tuition and fees. Understandably, a state with a lower per student rate than Hawaii may show a higher rate relative to expenditures (e.g., Georgia, Indiana, Tennessee), because of lower expenses or fewer educational services supplied. Contrariwise, a state with a higher per student rate than Hawaii may show a lower relative rate (e.g., New York, Massachusetts, Washington, Nebraska) because of higher expenses or greater amount of educational services supplied.[*]

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[23] Seymour E. Harris, *Higher Education: Resources and Finance* (New York, 1962), p. 151.

[24] *Non-resident Students and the University of Hawaii*, Legislative Reference Bureau, Report No. 3, 1963 (Honolulu), p. 63.

[25] Data based on *Compendium of State Government Finances in 1962*. Commercial activities and agricultural extension excluded. Data on tuition and fees taken from page 17, column entitled "General Revenue from Current Charges, other." For the University of Hawaii, overhead allowances paid by the East-West Center, totaling $156,000, are deducted.

As a percentage of total (current and capital) expenditures, it is clear that Hawaii's tuition and fees are considerably below the average for the eight mainland regions. In fact, they are the lowest for all regions except for the far-Western states. It so happens, however, that in fiscal year 1962 Hawaii's capital expenditures were abnormally large. Thus, relating tuition and fees to the total budget (column 1) has less practical usefulness for our purposes than does the relationship of tuition and fees to the operating budget (column 2). Moreover, the very low percentage which tuition and fees comprise of the total expenditures in the far-Western states results unquestionably from the low tuition fee policy of California and Alaska.

As a percentage of current expenditures, Hawaii's tuition and fees were somewhat above those of the Western states and close to the level of the states of all other regions except New England, which has relatively higher rates of tuition and fees than all other regions. The higher tuition and fees for public higher education in New England are probably influenced by the comparatively high tuition rates prevailing there in the many private universities and colleges.

Summarizing, Hawaii's students are paying tuition and fees which seem neither too high nor too low, as compared with what students are paying relative to what educational services they are receiving in most of the other states. Thus, it may be concluded that Hawaii's present level of tutition and fees, judged by mainland standards, is roughly appropriate.

Future Status of Tuition and Fees

Shifting now to tuition and fees in the future, other aspects of the situation must be considered. Most economists agree with Harris that future increases in tuition and fees are inevitable.[*] The question is, how much?

Between 1960-61 and 1961-62 the rise in tuition and fees in 62 land-grant institutions averaged nearly 6 per cent,[*] a rate of increase which has remained reasonably steady since 1957. That proportion of the operating budgets of public institutions of higher education in the United States comprised of student tuition and fees generally increased up to 1956, and since that year has been almost constant, indicating that total receipts from tuition and fees have been rising proportionately as rapidly as have the costs of higher education. In Hawaii, however, that proportion of the University's current expenditures defrayed by student tuition and fees fell sharply from 38.6 per cent in 1956 to 25.7 per cent in 1962, reflecting a relatively faster rise in current expenditures for higher education than in tuition and fees.[*] If the present level of tuition and fees is maintained, inevitably the proportional contribution made by tuition and fees to the operating budget will move below those of mainland institutions in the next year or two.

Three basic arguments for a substantial increase in tuition and fees during the coming decade can be justifiably advanced. First, the cost of the over-all program outlined in this Plan includes increases in costs resulting not only from work load increases, but also costs of new programs and improvements in the quality of existing ones. The state should bear portions of these added costs, but it is reasonable to expect that the students should defray some of them, because they will be recipients of more and improved services.

Second, costs of certain factors (land, buildings, equipment, personnel) responsible for producing higher education are expected to rise. Thus, in addition to costs for more and better services, services now offered must be priced higher in the future, because the cost of their components will be rising.

Third, the students' ability to pay for higher education is expected to rise. As in the past decade, general productivity and therefore average family (real) earnings are likely to rise by about 2–3 per cent per year in the future. For example, average (nominal) family incomes of the lowest 20 per cent in the nation rose from $1,056 to $1,803 between 1950 and 1961, while incomes of the second lowest 20 per cent increased from $2,418 to $3,805 during the same period. For all families the average increase was from $4,444 to $6,916.[*] These increases in family income amount to about 5 per cent per year, only half of which represents price rises.

In discussing students' ability to pay for higher education, Harris pointed out that university students come from families whose average incomes are generally higher than the national average.[*] In substantiation of this fact in Hawaii a survey was made in 1961 at the University of 4,315 students reporting their families' income wherein the following distribution was found:[*]

Income Bracket	*Percentage*
$10,000 and above	32.4
7,000–10,000	25.3
4,000– 7,000	32.5
4,000 or less	9.8

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[*] Data on tuition and fees per student are those of the U.S. Department of Health, Education and Welfare, *College and University, Finance Series*, March 1962, Table 4.

[*] Seymour Harris, *op. cit.*, pp. 52, 159.

[*] *College and University, Finance Series*, *loc. cit.*

[*] *Compendium of State Government Finances in 1962*, *loc. cit.*

[*] *Survey of Current Business*, July 1963, and *U.S. Income and Output*, U.S. Department of Commerce.

[*] Seymour Harris, *op. cit.*, p. 139-142.

[*] These data are reported and discussed in the HEW study, *University of Hawaii and Higher Education in Hawaii*, p. 72-74. The survey was conducted by the University of Hawaii's Bureau of Testing and Guidance. The students reporting comprised about two-thirds of the total receiving the questionnaire, a response rate expected in income surveys. The data may be regarded as adequate for our purpose, since there appears to be no systematic bias in the non-responding group.

The average (median) income of all the families reported was $7,700, about 20 per cent higher than the state-wide average revealed in the 1960 Census of Population. Understandably, University students' families tend to have higher incomes than state-wide averages because the parents tend to be older, more highly educated and possessed of more training.

If the University is to succeed in extending its opportunities to all who may be capable and who possess the desire and diligence to benefit from its services, a rise in tuition should be accompanied by an increase in scholarships for those unable to pay the higher tuition rates. A sensible policy is to allocate a part of the increased proceeds from higher tuition to scholarships for the lowest income group, e.g., to the students whose parents receive less than $4,000 in annual family income. A system of loans to parents and to students should supplement scholarships to assist those unable to afford the higher tuition rates.

Although the case for increased tuition is easily made, it is quite another matter to establish an appropriate upper level. Pending a more detailed study of the problem, it is recommended that the tuition per student be raised to the extent necessary to maintain the present ratio between receipts from student tuition and current expenditures of the University (25.7 per cent; see Table 14).[illegible] Roughly, this will mean that tuition per student may have to be doubled in the decade ahead to help pay for improvements in existing services, costs of expansion and new programs and increased costs of existing services due to rising prices.

Out-of-State Tuition Fee The University of Hawaii is apparently the only state university which does not charge non-resident students higher tuition. In 1961–62 the non-resident rates for public institutions of higher education on the mainland averaged 130 per cent higher than rates for residents. Because non-resident tuition fees have been rising more rapidly since then, the figure is probably closer to 150 per cent at present.[illegible]

For a number of years it has been emphasized, and rightly so, that the assessment of a higher non-resident tuition fee would probably decrease the number of mainland and foreign students at the University. This result would be unfortunate, it was argued, for it would remove one of the most effective means for overcoming insularity on the campus. The arguments were cogent, and convincing in the past. However, out-of-state students, both mainland and foreign, comprise an increasing portion of the student body at both the undergraduate and graduate levels. Assessment of a non-resident fee may have little adverse effect today. Therefore, in view of the University's increasing services and their costs, it is strongly recommended that steps be taken to impose a non-resident fee to ascertain its effect on the numbers of out-of-state students and on the University's financial base.

Enforcement of a non-resident tuition fee cannot be effective and is not recommended until a number of important caveats are considered. Perhaps the foremost difficulty in its implementation is the lack of clearly defined residency rules in the state. An Attorney General's opinion of two years ago, expressed on this same problem, indicated that a uniform interpretation was virtually impossible. Given an appropriate residency law, the responsibility for policing out-of-state tuition matters must be assigned—a situation, which has resulted in serious problems in some states.

Other problems which must be solved prior to implementation of non-resident tuition are (1) should out-of-state penalties be applied to undergraduate and graduate students alike, and at the same rate; (2) are military dependents to be exempt—or selectively exempt; (3) are foreign students to be exempt; (4) are dependents of newly hired professors to be exempt; (5) are graduate students who move to Hawaii exempt?

These and other questions, such as what should the non-resident penalty figure be, must be looked into in depth so that appropriate legislation can be enacted. Because the problem embodies legal, financial, and educational aspects, it seems especially amenable to research and recommendation by the Legislative Reference Bureau.

Financing Higher Education from the Federal Sector

Nature and Significance of Federal Support

Shortly after World War II federal aid to higher education in the United States expanded at a rate far surpassing all earlier records. In 1938, total funds spent on university research were only about $28 million. Some of this money was provided by the universities themselves. The only important outside sources of funds were the private philanthropic foundations. By contrast, research expenditure in 1958 mounted to $736 million, of which the federal contribution formed over two-thirds. Only three years later in 1961 the federal contribution alone was estimated at over $879 million.

Previous to 1943-1950, financial support by the government had consisted for the most part of aid programs for state agricultural experiment stations. Most of the new post-war federal funds were allotted to scientific research and technological development, especially in fields in which the scientific talent on university campuses had been utilized so effectively by federal agencies during the years of war. The influx of federal dollars during the past decade has emanated principally from the Department of Defense, National Institutes of Health, National Science Foundation, Atomic Energy Commission, National Aeronautics and Space Administration, Office of Education and other agencies with programs seeking professional assistance from or giving aid to universities.

The primary contribution of universities toward

[illegible] Current expenditures as used here excludes expenditures for equipment. In a concurrent study by the Legislative Reference Bureau details of scholarship and loan policies for students will be examined.

[illegible] See *College and University, Finance Series, loc. cit.*

keeping the United States in the forefront of the postwar technological race has been in the realm of basic research: in augmenting fundamental scientific knowledge necessary for applications useful to man. Research in the natural sciences has received the greatest emphasis during this period, but more recently a substantial effort is being made by leaders in science and education to alter Congressional and governmental policies which have caused a serious imbalance in the kinds of federal aid. These restrictions in federal support of research have affected the sense of "status" among the various academic disciplines and have even sometimes had an undesirable influence on institutional organization and morale. Though the overwhelming emphasis of federal support is still upon the natural sciences, increasing attention is now being given to the social sciences, education, and the development of skills in critically important foreign languages. Meanwhile, academic associations such as the American Council of Learned Societies have displayed considerable concern over federal policies in support of university research. It is quite possible that the recommendations of some of the learned groups, especially in the field of the social sciences and humanities, will ultimately help to modify certain of the restrictions in grants. But this can be only a gradual and long-range result.

Aside from the University of Hawaii's regular federal appropriations for agricultural research and extension, the University today receives federal aid chiefly in the form of support for action programs submitted in competition with the programs proposed by other universities. A governmental policy of awarding federal grants solely on the criteria of their scientific quality is a very laudable one. Yet it has certain adverse aspects. It was not originally a primary aim of the federal support of research to serve broad educational objectives or to build up academic excellence in parts of the country where it had not previously existed. Though the present system is adapting itself much better to the needs of the country as a whole, some critics charge that the progress being made is still too slow, and that federal funds continue to be used to lure scholars and students from the undeveloped areas to the large academic centers so that, in effect, the rich get richer and the poor get poorer.

The University of Hawaii has undergone its very rapid and interesting development in research and graduate study during these systematically competitive times. Furthermore, on the campus, in the community, and in the executive and legislative branches of the state government, there is arising a simultaneous recognition that economic well-being in Hawaii will in the future need to be more closely linked than at any time in the past to technologically-based industry. On this economic premise rests in part the hope and determination of many persons in Hawaii who are convinced that we should create at the University a strong and solid framework in the sciences.

Looking ahead, extension of the University's postwar progress in securing support for basic research is a goal of importance second to none, if the University is to achieve actual eminence in certain fields. But this goal is not important for the sake of "pure" science or for any kind of science alone. Throughout the nation, the federal funds flowing into universities have affected in complex fashion not only research but all other functions. In fact, some authorities have speculated that the influence of this aid on the broader aims and operations of universities may turn out to be more significant than the immediate effects on research.

There is no intention in this plan to gloss over the fact that the volume and influence of federal support of university research raises a number of unresolved problems. None of these problems, however, is unique to Hawaii. Each university deriving substantial federal aid must seek its own solutions and develop its own appropriate policies. For Hawaii the problems can be formulated as follows:

(1) How can the University exert suitable countervailing forces against pressures in our society at large to expand along one line of excellence at too great an expense to the development of others? What are the rational limits of following the principle of "selective emphasis?"

(2) What are the implications of our expanding volume of research for the capacity of the university to teach the approaching massive wave of students?

(3) How is the University to attract and keep teachers with research talent in the face of competition from industry, financed in part by federal money, and in competition with other federally aided universities?

Underlying all these questions is another question, one of the most important of all. How can the development of a strong scientific base at the University of Hawaii help to establish an environment throughout Hawaii as a whole where intellectual excellence of all kinds and at all levels is valued highly? It is not too much to say that this is one of the integrating questions underlying the entire Academic Development Plan, including some of its major recommendations.

Present Status of Federal Support

Federal support of the University's research program is chiefly of two kinds. The regular research and extension programs of the College of Tropical Agriculture comprise 22 per cent of the College's budget. To this regular recurring federal support are added special research projects in basic agricultural sciences. The aid for these is obtained primarily from the National Science Foundation and the National Institutes of Health.

Most of the other research programs of the University are supported by federal agencies on a project basis. During 1962-63 a total of $3,239,190 was received for research, 80 per cent of which was derived from federal funds, with each major research area being supported as follows: biological sciences 48 per cent, physical and chemical sciences 46 per cent, social sciences 5 per cent, and humanities 1 per cent. Figure 9 shows the trends in federal and state support of research since 1950. State funds for research, except for those agencies established to provide special services to the state government, are used frequently as "seed money" to develop projects to the point where more competitive applications can be made for federal support. Past experience indicates that each state dollar attracts about six federal dollars.

Federal funds for certain types of facilities, but only as specified within restricted categories, have been available during the past four years on a competitive basis. The University has been eminently successful in meeting the requirements and standards for such funds. Since 1961 a total of $3,406,000 has been obtained to construct wholly or in part the following facilities: (1) the campus research center, C. E. Kenneth Mees Solar Observatory on Mount Haleakala and the Manoa Seismographic Observatory of the Hawaii Institute of Geophysics, (2) Life Sciences Building, (3) Hawaii Marine Laboratory and (4) the renovation of Gartley Hall.

Major facilities grants for equipment have included matching funds for the IBM 7040-1401 computer system, an oceanographic research vessel and several grants for equipping both undergraduate and graduate scientific laboratories and special research facilities.

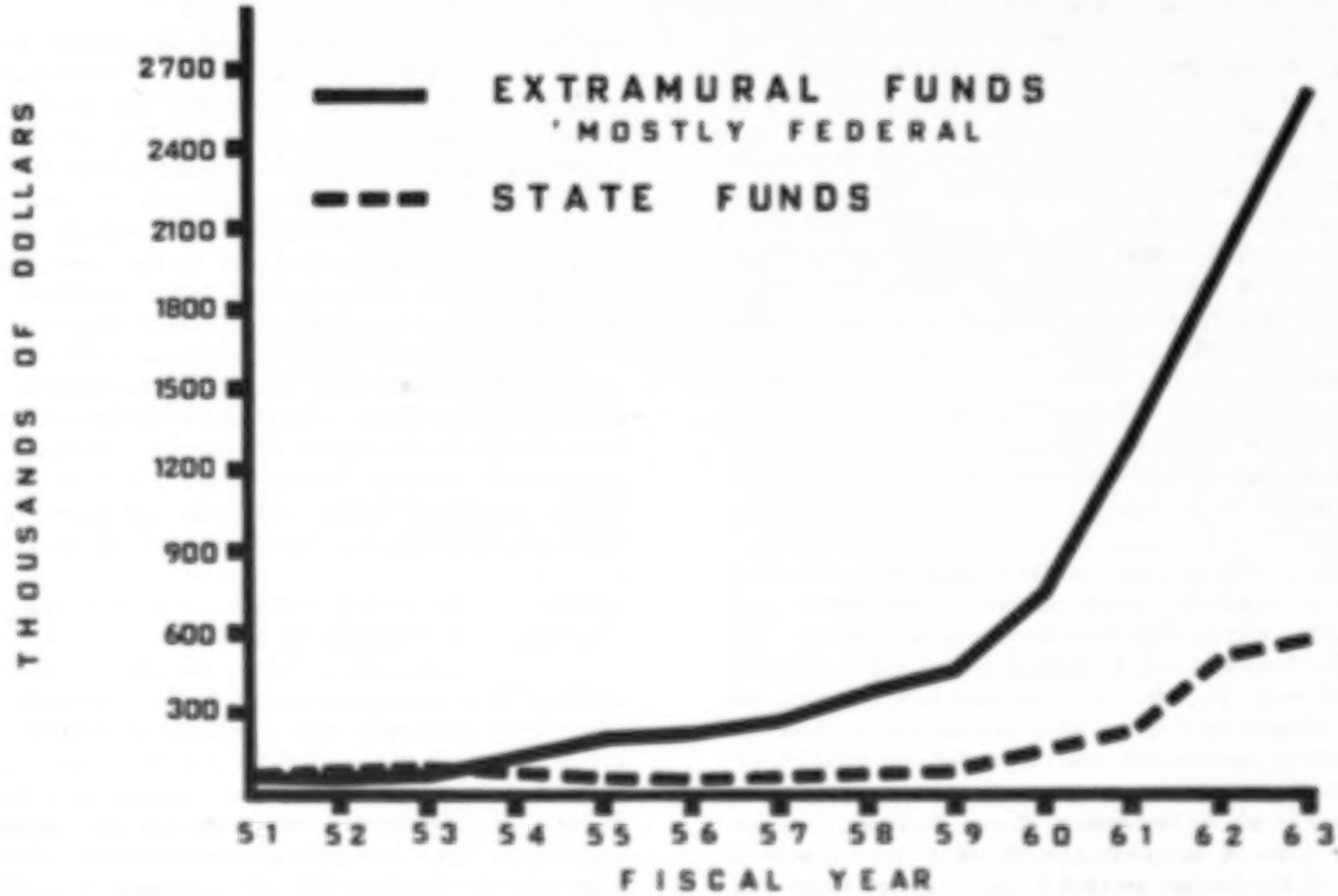
Under National Science Foundation sponsorship, the University is planning continued participation in special summer period or academic year teachers' institutes in science fields. These institutes have already contributed greatly to the improvement of science instruction in Hawaii's secondary schools. Extension of these institute programs by the University to Samoa during the summer of 1963 was also distinctly successful.

A few research training programs designed specifically for undergraduates have been supported by the National Science Foundation. Particular mention in this regard must be made of the federally sponsored summer research programs which have enabled outstanding high school students to gain experience in research laboratories at the University. Many of Hawaii's most capable secondary school students have become highly motivated toward careers in science as a result.

At the graduate level, the federal agencies have been giving special attention and emphasis to research training grants which provide, in addition to fellowships for the trainees, further funds for increasing professional staff, research supplies and equipment. Several such programs sponsored by the National Institutes of Health are presently in operation, others have been requested by the University. A new program of research training

FIGURE 9

RESEARCH SUPPORT AT THE UNIVERSITY OF HAWAII



grants sponsored by the National Aeronautics and Space Administration has great potential for the University in relation to the strong development here in astrogeophysics. The University has been chosen by NASA as one of a selected group of institutions eligible to seek aid from them for training in space science. Federally sponsored graduate level training programs are also currently active or being planned in social work and in nursing.

Various federal agencies support a multiplicity of fellowship programs. The University has participated in the National Defense Education Act Title IV Fellowship program for doctoral candidates from its outset. During 1963–64 thirty graduate fellows are being supported in six academic fields through these NDEA fellowships. A cost of education allowance is given at the University under this program which will provide about $60,000 in support of these doctoral departments during the current year. Under other titles of the NDEA Act the University benefits by other kinds of fellowships bearing cost-of-education allotments, as well as by participation in the student loan program. Both fellowships and associated cost-of-training allotments are provided by other federal agencies to University programs in the biomedical sciences and in fishery biology.

Future Prospects for Federal Aid

Mounting costs of graduate level education, along with needed capital improvements to handle the more than doubled college population anticipated in the decade ahead, patently cannot be met by state and local financing alone. The University of Hawaii could not possibly carry out its full responsibilities were it not for present federal grants. Future trends and changes in policy at the federal level will almost certainly involve: (1) a consolidation of the numerous similar programs of aid provided by various agencies so that the states may better coordinate planning and implementation of programs in which federal aid is needed and available; (2) a modification of the strictly competitive system of seeking federal funds because of the sheer necessity of broadening the geographic base of high quality university programs, not to mention the practical congressional politics of the matter; and (3) a continuously increasing amount of federal aid accompanied by a wider scope in categorical opportunities and a relaxation of the sort of restrictions characteristic of the present programs.

Facilities Three major pieces of legislation extending aid to higher education were under consideration during the 1963 Congressional session. The "Health Professions Educational Assistance Act" (HR 12) has been enacted. It is designed to increase the supply of professional health personnel and to ease the shortage in the several health-related professions. It authorizes a three-year program of matching grants (up to 75 per cent) for the construction of teaching facilities for the training of physicians, dentists, nurses, professional public health personnel, etc. This measure will have important implications for the University as it develops and extends its training programs in the health and biomedical sciences. Participation in this program could be under way as early as 1965 if presently developing plans for a school of basic medical sciences are found feasible by the legislature. Programs already exist among federal agenices which will match up to 50 per cent non-federal funds for all types of graduate level and research facilities in the the natural and social sciences.

A second measure of direct support for facilities passed this session, is the "College Academic Facilities Bill" (HR 6143). This bill provides for matching aid (up to one-third) chiefly for undergraduate and graduate facilities for the sciences, mathematics, engineering, modern foreign languages, and libraries. The measure provides formula-based aid related to the high school and college enrollment in each state. Although Hawaii's share in any one year of this five-year program will not be great, subsequent legislation may increase the funds available. Potentially, an important aspect of the bill for Hawaii is a categorical allotment of 22 per cent of the funds provided each state each year for the construction of junior or community colleges and technical institutes. A loan program is also included in the bill.

A third facilities aid program, now enacted as Public Law 88-74, provides matching funds (50 per cent) on a formula-based allotment for the construction of agricultural research facilities. Hawaii's share for fiscal year 1964 would approximate $92,000, and an accumulation of funds over a two-year period is permitted.

Research The intensified support of scientific research over the past two decades is expected to relax somewhat and reach a level in the next year or two, except for space-related and, possibly, ocean-related research programs. Since these programs have from their inception been areas of keen competition among universities, a relative contraction in the amount of funds available will make competition all the more vigorous as more persons seek support from a stabilized rather than an ever-growing federal source of supply.

Quality unquestionably will continue to be the touchstone of federal research support to universities. Thus, the competition between institutions will become greater and not less in the future, forcing the University to be increasingly alert to the recruitment and retention of highly competent faculty, and to the continual improvement of the intellectual milieu on and off campus.

Science Teaching Increasing concern over the geographic distribution of federal support to science was evident during the 1963 Congressional session. Of extreme importance to the University is the recognition nationally that programs of federal aid to science and related subject fields should involve a greater number of institutions, that there should be a broader geographic distribution of participating institutions, and that a more extensive improvement of undergraduate science teaching will be necessary to assure an adequate supply of well-prepared undergraduates to continue their work in graduate schools training for careers of teaching and research in science.

It is a matter of concern to many that funds for strengthening the nation's potential in science have been concentrated in a relatively small number of institutions. Some agencies, especially the National Science Foundation, are planning new programs designed to broaden the base, not by curtailing activity in our strongest institutions, but by increasing support in those which can become additional centers of excellence.

The University must embark on creative planning in broadly based programs of improving undergraduate and graduate science teaching to be ready to participate in newly developing federal aid programs designed to raise broad interdisciplinary areas of science (e.g., engineering and mathematics; geophysics and mathematics; biomedical sciences) from reasonably good quality to top level quality. In so doing we will be able to offer to graduates from Hawaii's secondary schools, who have benefited from improved secondary level teaching through the science teacher's institutes, college science teaching of high quality in well-equipped laboratories.

Financing Higher Education from the Private Sector

Recent financial studies of higher education have pointed out that most mainland states, if they are willing to shoulder such a sacrifice, can provide sufficient tax revenues to support an adequate undergraduate collegiate program and minimal graduate opportunities. Naturally, the degree to which this can be done varies widely and in proportion to the state's economic base.

When to this state support is added a systematic development of federal resources, a new stage toward the desired goal of educational quality is made possible. But the margin of greatness, that indefinable thing which distinguishes among individuals the champion professional as compared with the very talented amateur, must come from the private sector of the economy through philanthropic giving.

Many state universities have made impressive progress along these lines. In the year 1960-61 America's public universities received a total from voluntary private sources of over $115 million. Of the 83 public institutions which provided information for this study, the University of Hawaii ranked seventy-sixth. Four of the seven which ranked below Hawaii were institutions which only in the last year or so had been made universities, having formerly been state colleges.

Voluntary support is not only becoming of increasing importance in terms of capital projects and money for current operations, but many state universities have also managed to accumulate substantial endowment funds to assist in support of the education program. The ten institutions of the 128 reporting on this matter, and possessing the largest endowments, ranged from a low of $15.5 million at Rutgers to $34 million at the University of Michigan, $121 million at the University of California, and $396 million at the University of Texas.

Clearly, private donations to the University of Hawaii are not a very common practice. And yet such individual support should be common, and could be, if only those of us who make our homes in Hawaii and earn our living here, and plan to continue doing both, would come to realize that we shall not have the kind of society we desire—either economically, socially, or culturally—unless private sources provide the funds to achieve the necessary margin of greatness.

Neither the complex educational environment of New England nor that of California is nearly so much in real need of the voluntary support of individuals and corporations as is the University of Hawaii. And it is the individuals and corporations living and doing business in Hawaii which will profit most directly when the University of Hawaii succeeds in becoming the quality institution we all hope to see.

It is not fair, however, to lay the blame for undeveloped private support of the University on the reluctance of donors in the state. Part of this responsibility rests with the University for not more systematically seeking such support. For example, we do not even have, at the moment, an up-to-date and complete mailing list of the former students of the University of Hawaii, in many institutions a substantial source of funds. Such a list is now being compiled.

Therefore, it is the recommendation of the Committee that the University, after careful thought, outline a continuing plan for making gifts to the University and implement that plan with vigor over the next several years. It is realized that it will not be easy to change the attitudes and habit-patterns of Hawaii's residents in this respect. And yet the University's case is both so clear and so excellent that in the long run it seems likely that the program will be rewarding.

At this juncture it is, of course, almost impossible to prophesy how much such support might be engendered over a ten-year period. And in fact it is somewhat dangerous even to try, lest predictions be considered too pessimistic by some, too optimistic by others. But it seems safe to say that ten years hence annual private giving to the University of Hawaii should be, at the minimum, $500 thousand a year. In addition, there should be from time to time substantial gifts for capital purposes, for in this realm of the University's development it is frequently possible to match federal dollars with private dollars and in this way double our money, as it were.

Financial Feasibility of the Plan

Cost projections for both operations (p. 92) and non-liquidating capital improvements (p. 98) call for a steady increase annually to 1975-76. Operational expenses will total about $62 million in 1975-76 as compared with about $14 million in 1962-63, a four and a half-fold increase, but proportionately less than the five-fold increase which has occurred over the past 12 years. A future increase of this magnitude is believed to be well within the financial potential of the State of Hawaii when combined with other sources of revenue available to the University. This optimistic view assumes that:

(1) the improvement in quality of the University's services will be accompanied by a proportionate rise in the University's tuition and fees;

(2) federal aid programs for higher education will increase substantially, especially if a reduction occurs in military expenditures;

(3) personal incomes will double which, with increases in the productivity of the tax structure, should result in more than a doubling of state revenues; and

(4) a continuing drive for donations from the private sector will materially increase the University's income.

Should these favorable circumstances develop as anticipated, the percentage of state revenues committed to higher education in Hawaii probably needs to rise but moderately, perhaps only from the present 12 per cent to about 18 per cent by 1975-76.

Taking a highly pessimistic view — assuming that (1) the productivity of the state tax structure remains unchanged over the next 12 years, (2) the amount of federal aid does not increase proportionately above the present level, and (3) the University fails to increase its income from private sources — the percentage of state revenues which might have to be committed would have to double, from the present 12 per cent to about 25 per cent in 1975-76. Even this proportionate increase is not beyond the economic capability of the state, considering the reduced urgency to expand other functions of the state in the period ahead compared with the past decade (p. 104).

Projected non-liquidating capital improvement costs vary from $5.2 million in 1964-65 to $6.5 million in 1975-76 (p. 98). A large share of these costs will be met by increased federal support for construction and equipment, and a substantial portion will probably be met by private funding. Much of the state's share of these costs could conceivably be financed by bond issues to reduce the immediate drain on tax revenues.

EDUCATION AND ECONOMIC GROWTH

The foregoing survey of resources for financing higher education in Hawaii indicates that the extensive expenditures called for in this report are within the economic capability of the people in Hawaii. The rise in incomes in the State of Hawaii in the next decade, when combined with federal aid programs and private philanthropy, will make possible the resources needed to move the University up the quality scale to achieve the distinction sought by Hawaii's citizenry.

It should be pointed out that economic analysis demonstrates that dollars spent on higher education can make a substantial impact on the future of the entire economic community and hence on the future incomes of Hawaii's people. Throughout the text of this Academic Development Plan many examples have been cited to indicate the relation of various University programs to the development of new skills, professions, industries, technologies, and in general to the wider diffusion of knowledge in Hawaii.

Partly as a result of the rapidly increasing costs of higher education, American economists have been analyzing the role of education in the growth of our national economy. They were forced to a consideration of the contribution of education to the growth of the Gross National Product (GNP) of the United States, because the factors hitherto employed to explain the economic growth of a country, i.e., the *quantity* or *volume* of labor, land, and capital, could not fully account for the growth of GNP in the United States.

Since 1869 the GNP of the United States has increased 13 times, the quantity of land, labor, and capital used in producing the GNP rose but five or six times.[*]

Clearly the fact that the growth rate in the GNP so greatly exceeded the rate of growth of the volume of resources used could only be explained by an improvement in the efficiency and quality of the dynamic factors involved. Observing that the quality of labor has changed considerably and that expenditures on education have been rising in proportion to the GNP since 1900, economists undertook studies devised to measure the extent to which educational expenditures and the improvement in skills and capabilities thus financed have contributed to the rise in productivity and, hence, GNP. These analyses are yet in their preliminary stages and results thus far produced must be regarded as still somewhat tentative in certain details. But sufficient results are at hand to indicate that the principle is sound and that the contributions by education to our economic growth have been enormous.

Theodore Schultz, a pioneer in this field at the University of Chicago, concludes that approximately one-third of the thirteen-fold increase in the GNP is probably attributable to education.[**] Other economists working with data on the total costs of university education and the lifetime incomes earned by university graduates have concluded that investing in a university education is as profitable, on the average, as investing in stocks and bonds.[***] Put another way, the rate of return on a dollar of university education is about equivalent to the return expected by industry through investment in plant and equipment.

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[*] Moses Abramovitz, *Resource and Output Trends in the United States since 1870*, National Bureau of Economic Research, Occasional Paper 52 (New York, 1956).

[**] "Education and Economic Growth" in *Social Forces Influencing American Education*, 1961, Nelson B. Henry, ed.

[***] "Educational Income," *Review of Economics and Statistics*, 41, February 1959. Also "Investment in Man, an Economist's View," in *The Social Service Review*, June 1959.

Roughly similar results and conclusions have been found for other countries which underwent rapid growth, *i.e.*, Japan, West Germany, the Soviet Union, and Puerto Rico. Unfortunately for this presentation, studies along these lines for Hawaii have not as yet been undertaken. But there appears to be no a priori reason to expect anything but similar results for Hawaii since 1900. Especially apparent in Hawaii has been the rapid growth of both education and the economy over the past half century. The skills and capabilities of the second and third generation offspring of immigrants have been mainly the products of the system of public education, especially education through the secondary level.

That the rapidity of the growth of Hawaii's economy in the future will depend in a crucial way on the development of higher education in Hawaii is a generally accepted principle. Many of the programs emphasized in this planning report were selected partly because of their anticipated ultimate impact on our economy. Certain of these programs are directly related to the development of our natural resources, the expansion of economic opportunities and the creation and attraction of new industries and businesses. Others involve the teaching of new skills, capabilities, and occupations to our youth. Still others are designed to improve the efficiency and quality of existing skills and capabilities. In all these endeavors the University of Hawaii, unlike mainland universities, assumes a unique and profoundly serious responsibility. Because of the high cost of relocation here by workers from the mainland, and because of the three-year residence requirement for public employment in the state, the University is responsible for the education and training of virtually all the younger professional staff available for private and public employment throughout Hawaii.

It is well known that the problem of higher education in the United States in the coming years will be complicated by a vast increase in enrollment and, concomitantly, accelerating technological changes. But for the University of Hawaii these changes may be even more complicated by the possibility that in future years employment in our traditional, basic economic activities such as sugar, pineapple, and military industries may substantially decline. To cope with these eventualities we must prepare the groundwork for the development of new and additional economic activities in the years looming up ahead.

The role of higher education will be a strategic one, therefore, in structuring the foundations of Hawaii's economy and cultural life as the state moves into what certainly will be a new phase in our developmental history. Hopefully, with this Academic Development Plan the University of Hawaii, likewise, will move into a new era of increasing strength in support of the vital activities of our community.

SUMMARY OF PART VI: IMPLEMENTATION OF THE PLAN

The program of improvement and expansion developed in this Plan reflects a serious and responsible ambition for the University of Hawaii and the state which it serves, an ambition tempered by a realization of the limits of financial support which may be reasonably expected from the state.

From beginning to end, this Plan includes appraisal and self-criticism. Areas of needed improvement in teaching, research, organization, and administration are pointed out, with proposals for their betterment. However, in this section of the report which deals with the resources available to the University, the emphasis has been on the additional personnel, buildings, equipment and supplies which an improved university will require, rather than on how much more productivity can be achieved with existing buildings and money. This does not mean that the University—an agency which is decidedly human—is perfectly efficient. It does mean that, measured by the most objective comparisons available, the University has been doing rather much with rather little, to wit:

(1) The University's utilization of classroom space has been much more intense than the national average for colleges and universities (pp. 94–95).

(2) The size of the University's library collection is far below nationally established norms and the collections of comparable public universities (p. 67).

(3) The amount of financial support received by the University has been below national averages, well below those of other Western states (pp. 99–101, 103–104, 111).

The attainment of the academic goals set forth in this Plan will require the expenditure of amounts rising significantly above the level of recent University budgets. It is obviously difficult to project financial requirements a dozen years into the future, but, by the best estimates, annual increases for current operations averaging between $3 million and $4 million will be needed to implement the Plan. To enlarge and improve campus facilities to accommodate some 23,000 students twelve years from now will require an annual expenditure ranging from $4.5 million to almost $9 million for buildings, including furnishings.

Some of the additional funds required to implement the Plan may be obtainable from the federal government, largely depending on the kinds of aid-to-education legislation enacted in Washington. In the past the University has been quite successful in getting federal funds: most of its science facilities and research program have been supported by federal agencies.

Further, the University should make a more energetic effort to get support money from its numerous alumni and other persons in the community of Hawaii. (Of 83 public universities throughout America which reported their receipts from voluntary private giving in 1960-61, the University of Hawaii ranked 76th—and four of the seven ranking below Hawaii had just been converted from colleges to universities.)

The student tuition and fees currently charged by the University of Hawaii approximate the average of comparable state universities. Hawaii's tuition policy has been distinctive, however, in charging all students the same amounts, without regard to their state or country of residence. Financial needs and the pressure of a rapidly increasing student body require an examination of the level of tuition charges and the nondiscriminatory policy. In recognition of the economic value of a university education to the student, as well as of the rising costs of providing that education, it is recommended that tuition charges be adjusted upward in proportion to those costs and that an out-of-state fee be imposed as soon as the legal interpretation of residency and other related matters are clarified.

Given the most efficient use of its budget, assuming a high degree of success in obtaining federal grants and private donations, assuming even a doubling of tuition fees and the imposition of a special fee for nonresident students, the University of Hawaii must still continue to look to the state government for the largest part of its financial resources. Next only to the wisdom and energy with which the University goes about its work, the success of this Plan depends on the level of support given by the executive and legislative arms of the state.

In the considered opinion of the drafters of the Plan, the amounts of state appropriations which would be required for its implementation are not out of line either with the financial capacities of the State of Hawaii, or with the relative support given their public universities by other states. Evidence indeed suggests that the most profitable investment in Hawaii's economy which can be made now is in providing university education. In view of the narrowly limited natural resources available to enterprise in our state, we believe that the best possible training of the minds of its young citizens is the most important stimulus to the local economy which the state government can give. Mindful especially of Hawaii's aspirations to make a unique contribution to the civilization of America and its Pacific neighbors, we believe that an improved University is the most powerful lever available to this state for raising the cultural and economic base. It is for these purposes, ambitious for the people of Hawaii, that this Plan is presented.

Part VII: MAJOR RECOMMENDATIONS CONCERNING THE IMPLEMENTATION OF THE PLAN

A. *Personal Services*

	PAGE
1. Provide faculty advisors for freshmen and sophomores: one advisor per 25 students (or one full-time position per 100 students). Add 24 positions for 1964-65	90-91
2. Provide additional librarians to carry out change in indexing system and to reduce backlog in cataloguing. Some 22 positions in all required for 1964-65, in addition to normal work load increase	91
3. Expand faculty and staff positions for new or improved programs. Add some 112 positions for 1964-65, in addition to staff needed to serve normal growth, to enable University to catch up with existing needs	91
4. Provide needed secretarial help for instructional departments and for research divisions according to formulae recommended. Add 21 such positions in 1964-65	91
5. Provide additional positions to strengthen Honors Program, Student Health Service, Office of Publications and Information, budget and financial operations—in all at least 17 positions for these purposes in 1964-65	91
6. Improve maintenance and operation of University physical plant through contracts with private firms and by expanding University's own maintenance crew with 28 positions in 1964-65	91
7. Continuously review University operations to seek ways of increasing quantity and quality of academic services, without commensurate increase in staff	91

B. *Physical Facilities, Equipment, Operating Costs*

	PAGE
1. Replace temporary and obsolescent buildings with permanent construction during plan period	96
2. Plan and provide some 1.5 million square feet (gross) of space for classrooms, laboratories, offices, study areas and other necessary functions over period 1965-75, at annual cost—from all sources—ranging from approximately $5 million to $9 million	96-97
3. Provide additional facilities for athletics in former quarry area, at cost of about $250,000 per year until 1968	97
4. Provide adequate parking, to be largely self-financed by fees, but requiring initial appropriation of $120,000	97-98
5. Effect better collaboration between architects and campus users in designing University construction. Consider establishment of campus planning office	98-99
6. Increase allocation for current expenses by some $400,000 in 1964-65 for augmentation to an adequate level of services, including maintenance of the physical plant. Additional increases will be required for normal work load increases	92
7. Augment allocation for equipment by approximately $800,000 in 1964-65, in addition to requirements for work load increase, to more adequately equip the University for teaching research and maintenance	92

C. *Self-financing; Scholarships*

	PAGE
1. Prepare a continuing plan to encourage more private giving to the University, by alumni and other private donors	111-112
2. Keep abreast of all programs of federal aid to higher education so that Hawaii may participate effectively	110-111
3. Raise tuition and fees per student over the years to maintain present ratio (25 per cent) between receipts from student tuition and current expenditures of University	106-107
4. Require payment of non-resident fees by out-of-state students as soon as feasible	107-108
5. Increase number and value of scholarships to ensure that tuition fee increases are not a barrier to qualified students	107

Part VIII: APPENDICES

APPENDIX TABLE 1

EMPLOYMENT OF MAJOR OCCUPATIONAL GROUPS, 1960-1975[1]
(in millions)

Major occupational groups	1960	1970	1975	Percentage Change, 1960-1975
Professional, technical and kindred workers	7.5	10.7	12.4	+65
Managers, officials and proprietors, except farm	7.1	8.8	9.4	+32
Clerical and kindred workers	9.8	12.8	14.2	+45
Sales workers	4.4	5.4	5.9	+34
Craftsmen, foremen and kindred workers	8.6	10.3	11.2	+30
Operatives and kindred workers	12.0	13.8	14.2	+18
Service workers	8.3	11.1	12.5	+51
Laborers, except farm and mine	3.7	3.7	3.7	00
Farmers, farm managers, laborers and foremen	5.4	4.2	3.9	−28
TOTAL	66.7	80.5	87.6	+31

[1] *Manpower Report of the President and a Report of Manpower Requirements, Resources, Utilization and Training by the United States Department of Labor; Transmitted to the Congress March, 1963* (U.S. Government Printing Office, 1963), pp. 100, et-seq.

APPENDIX TABLE 2

EMPLOYMENT OF MAJOR CIVILIAN OCCUPATIONAL GROUPS IN HAWAII, 1940 TO 1960[1]

Major occupational groups	1940	1950	1960	Percentage increase or decline 1940-50	1950-60
Professional, technical and kindred workers	11,289	16,433	25,299	+45.7	+54.0
Managers, officials and proprietors, except farm	10,782	13,940	17,795	+29.6	+27.6
Clerical and kindred workers	10,174	20,798	30,412	+104.4	+46.2
Sales workers	8,054	10,812	13,554	+34.3	+25.3
Craftsmen, foremen and kindred workers	16,519	25,946	33,276	+57.1	+28.3
Operatives and kindred workers	17,785	25,138	29,455	+41.3	+17.2
Service workers	17,982	19,623	25,287	+9.1	+28.8
Laborers, except farm	14,601	12,558	12,997	−14.0	+3.5
Farm managers, owners, laborers and foremen	46,080	21,250	13,576	−53.9	−36.1
Occupation not reported	573	1,068	7,739		
Total employed	153,796	167,571	209,370	+ 9.0	+24.9

[1] Source: U.S. Census.

APPENDIX TABLE 3

POPULATION OF THE UNITED STATES AND HAWAII, 1930-1975[1]

Year	United States Number (in thousands)	Index	Hawaii Number (in thousands)	Index
1930	122,775	68.5	368	58.2
1940	131,669	73.4	423	66.9
1950	150,697	84.0	500	79.0
1960	179,323	100.0	633	100.0
1965	196,217	109.4	717[2]	113.3
1970	214,222	119.5	767[2]	121.3
1975	235,275	131.2	818[2]	129.3

[1] Source: U.S. Census.

[2] *Memorandum on Population Projections for Hawaii, 1963-1983* (State of Hawaii Department of Economic Development, May 24, 1963), p. 11.

APPENDIX TABLE 4

THE 18-21-YEAR-OLD COHORT POPULATION IN THE UNITED STATES, 1869-1962, AND PROJECTED TO 1980

Year	Population (thousands)	Index
1869-70	3,116[1]	
1879-80	4,253	
1889-90	5,160	
1899-1900	5,931	
1909-10	6,934	
1919-20	7,386	
1929-30	8,862	
1939-40	9,582	
1941-42	9,703	
1943-44	9,706	
1945-46	9,557	
1946-47	9,403[2]	
1947-48	9,276	
1948-49	9,144	
1949-50	8,990	93.5
1950-51	8,948	
1951-52	8,763	
1952-53	8,576	
1953-54	8,487	
1954-55	8,494	88.4
1955-56	8,577	
1956-57	8,780	
1957-58	8,935	
1958-59	9,083	
1959-60	9,293	
1960-61	9,605	
1961-62	10,231	
1960	9,610[3]	100.0
1965	12,090	125.7
1970	14,244	148.2
1975	15,768	164.1
1980	16,430	

[1] Data 1869-70 to 1945-46 from *Statistics of Higher Education 1957-58*, Biennial Survey of Education in the United States, 1956-58, Office of Education, Department of Health, Education and Welfare, OE 53017-58, Table 3, p. 7, 1962.

[2] Data 1946-47 to 1961-62 from *Digest of Educational Statistics*, Office of Education, Department of Health, Education and Welfare, OE 10024, Table 48, p. 90, 1962.

[3] Series III projections. *Fact Book*, p. 25, Primary source: *Current Population Reports*, Series P-25, No. 251, July 6, 1962; Bureau of the Census. (Note: 1960 refers to fiscal year 1960-61.)

APPENDIX TABLE 5

THE 18-21-YEAR-OLD COHORT POPULATION IN HAWAII, 1940-60, AND PROJECTED TO 1972

Year	Population	Index
1940	40,804[1]	
1950	40,478	93.4
1951	38,619	
1952	37,369	
1953	35,787	
1954	35,360	
1955	35,248	81.4
1956	36,337	
1957	37,465	
1958	39,436	
1959	41,358	
1960	43,312	100.0
1961	45,942[2]	
1962	49,228	
1963	51,986	
1964	54,407	
1965	57,348	132.5
1966	59,463	
1967	61,870	
1968	63,321	
1969	63,070	
1970	64,144	148.1
1971	66,222	
1972	68,718	

[1] Data 1940, 1950 and 1960, Bureau of Census. Intervening years 1950 to 1960 estimated by D. Yamamura.

[2] Projected data 1961-72 from *University of Hawaii and Higher Education in Hawaii*, Department of Budget and Review, State of Hawaii, November 1962: Table 45, p. 58.

APPENDIX TABLE 6

HIGH SCHOOL SENIOR COHORT POPULATION IN HAWAII BY YEAR AND BY FOUR-YEAR ACCUMULATIONS, 1951-61, AND PROJECTED TO 1975

Year	High school seniors	Four-year accumulation
1951	6,415[1]	
1952	6,337	
1953	6,293	
1954	6,153	25,198
1955	6,551	25,334
1956	6,715	25,712
1957	7,090	26,439
1958	7,078	27,364
1959	7,414	28,227
1960	8,135	29,647
1961	9,335	31,962
1962	9,890	34,774
1963	9,945	37,305
1964	10,451	39,621
1965	11,352	41,638
1966	11,281	43,029
1967	11,632	44,716
1968	12,030	46,295
1969	12,316	47,259
1970	13,112	49,090
1971	13,536	50,083
1972	14,119	53,083
1973	14,683[2]	55,450
1974	15,270	57,606
1975	15,881	59,953

[1] Data for 1951 to 1972 from *University of Hawaii and Higher Education in Hawaii*, Department of Budget and Review, State of Hawaii, November 1962: Table 42, p. 55; projections assume a 1 per cent increase in retention rate.

[2] Data for 1973 to 1975 extrapolated from data in fn. 1.

APPENDIX TABLE 7

HIGH SCHOOL SENIOR COHORT POPULATION IN HAWAII BY DISTRICTS, 1952–61, AND PROJECTED TO 1972[1]

Year	Oahu	Maui	Kauai	Hawaii	Total[2]
1952	4,073	754	436	1,074	6,337
1953	4,082	789	402	1,020	6,293
1954	4,110	649	413	981	6,153
1955	4,263	769	451	1,068	6,551
1956	4,517	753	427	1,018	6,715
1957	4,652	834	476	1,038	7,000
1958	4,730	828	449	1,071	7,078
1959	5,038	832	501	1,043	7,414
1960	5,818	815	488	1,014	8,135
1961	6,834	863	497	1,141	9,335
1962	7,194	900	554	1,183	9,831
1963	7,436	830	508	1,141	9,915
1964	7,990	832	488	1,134	10,444
1965	8,702	899	572	1,176	11,349
1966	8,931	864	571	1,211	11,577
1967	9,071	850	535	1,194	11,650
1968	9,444	881	523	1,210	12,058
1969	9,681	865	561	1,238	12,348
1970	10,567	855	593	1,164	13,179
1971	11,036	836	538	1,211	13,621
1972	11,595	837	541	1,243	14,216

[1] Data from *University of Hawaii and Higher Education in Hawaii.* Department of Budget and Review, State of Hawaii, November 1962: Table 23, pp. 31–32. Projections assume a 1 per cent per y ear increase in retention rate.

[2] Totals do not agree with those of Table 3, Column 2, in the case of projections, presumably due to errors in rounding individual projections and summing.

APPENDIX TABLE 8

TOTAL DEGREE-CREDIT FALL ENROLLMENT (ALL INSTITUTIONS)[1] EXPRESSED AS A PERCENTAGE OF THE 18–21 YEAR OLD COHORT POPULATION[2] IN THE UNITED STATES, 1869–1962 AND PROJECTED TO 1980

Year	Percentage
1869–70	1.7
1879–80	2.7
1889–90	3.0
1899–1900	4.0
1909–10	5.1
1919–20	8.1
1929–30	12.4
1939–40	15.6
1941–42	14.5
1943–44	11.9
1945–46	17.5
1946–47	22.1
1947–48	25.2
1948–49	28.3
1949–50	27.2
1950–51	25.5
1951–52	24.0
1952–53	24.9
1953–54	26.3
1954–55	28.8
1955–56	30.9
1956–57	33.2
1957–58	34.0
1958–59	35.6
1959–60	36.2
1960–61	37.2
1961–62	37.7
1960	37.1[3]
1965	44.5
1970	49.3
1975	52.8
1980	53.6

[1] Data from Appendix Table 10, Column 2.

[2] Data from Appendix Table 4, Column 2.

[3] Projected.

APPENDIX TABLE 9

TOTAL DEGREE-CREDIT, FALL, DAYTIME, UNDERGRADUATE ENROLLMENT[a] AT THE UNIVERSITY OF HAWAII (A) EXPRESSED AS A PERCENTAGE OF THE 18-21 YEAR OLD COHORT POPULATION,[b] AND (B) EXPRESSED AS A PERCENTAGE OF HIGH SCHOOL SENIOR COHORT POPULATION,[c] FOR 1950-63, AND PROJECTED TO 1975

Year	A Per Cent	B Per Cent	
1950-51	10.55	—	
1951-52	10.12	—	
1952-53	10.70	—	
1953-54	11.08	—	
1954-55	11.32	(15.89)	
1955-56	12.61	17.54	
1956-57	12.97	18.33	
1957-58	13.09	18.58	
1958-59	13.68	19.72	
1959-60	13.80	20.22	
1960-61	14.31	20.90	
1961-62	14.50	20.85	
1962-63	14.99	21.22	
		Projections	
		Linear[d]	Curvilinear[e]
1963-64		22.14	21.44
1964-65		22.67	21.64
1965-66		23.22	21.82
1966-67		23.76	21.96
1967-68		24.31	22.08
1968-69		24.86	22.18
1969-70		25.40	22.27
1970-71		25.95	22.34
1971-72		26.49	22.40
1972-73		27.04	22.45
1973-74		27.58	22.49
1974-75		28.13	22.53
1975-76		28.68	22.55

[a] Undergraduate enrollment data from 1950-51 to 1962-63 from Appendix Table 11, column 2.

[b] 18-21-year-old cohort population from 1950-51 to 1962-63 from Appendix Table 5, column 2.

[c] High school senior cohort population from 1954-55 to 1962-63 from Appendix Table 6, column 3.

[d] Linear equation: $Y = 17.7558 + 0.54619\ X$; $Y = \%$; $X =$ code year, 1955-56 = O.

[e] Curvilinear equation: $\log\ (22.702 - Y) = 0.72049 - 0.7740\ X$.

APPENDIX TABLE 10

Total Degree-Credit Enrollment (All Institutions) in the United States, 1869-1962, and Projected to 1980

Year	Actual enrollment (thousands)	Year	Projected enrollment (thousands)
1869-70	52[1]	1960	3,570[3]
1879-80	116	1961	3,938
1889-90	157	1962	4,270
1899-1900	238	1963	4,571
1909-10	355	1964	4,916
1919-20	598		
1929-30	1,101	1965	5,379
1939-40	1,494	1966	5,800
		1967	6,165
1941-42	1,404	1968	6,457
1943-44	1,155	1969	6,737
1945-46	1,677		
		1970	7,080
1946-47	2,078[2]	1971	7,326
1947-48	2,338	1972	7,594
1948-49	2,403	1973	7,841
1949-50	2,445	1974	8,089
1950-51	2,281		
1951-52	2,102	1975	8,325
1952-53	2,134	1976	8,512
1953-54	2,231	1977	8,625
1954-55	2,447	1978	8,732
1955-56	2,653	1979	8,786
1956-57	2,918		
1957-58	3,037	1980	8,815
1958-59	3,226		
1959-60	3,365		
1960-61	3,570		
1961-62	3,861		

[1] Data 1869-70 to 1945-46 from *Statistics of Higher Education, 1957-58*, Biennial Survey of Education in the United States, 1956-58; Office of Education, Department of Health, Education and Welfare, OE 53017-58, Table 3, p. 7, 1962. Data rounded to nearest thousand; fall and unduplicated spring enrollment.

[2] Data 1946-47 to 1961-62 from *Digest of Educational Statistics*, Office of Education, Department of Health, Education and Welfare, OE 10024, Table 48, p. 90, 1962. Data rounded to nearest thousand, fall enrollment only.

[3] Data 1960 (=1960-61) *Current Population Reports*, Series P-25, No. 232. Series IIIA, assuming: (1) fertility will decline from 1955-57 level to 1949-51 level by 1965-70 and continue at that level through 1975-80; (2) average annual rate of change in enrollment rates by 1966 would be one-half of what it was between 1950-52 and 1957-59, and then level off by 1975 to 1980.

APPENDIX TABLE 11

TOTAL FALL, DEGREE-CREDIT, DAYTIME ENROLLMENT AT THE UNIVERSITY OF HAWAII, ACTUAL AND PROJECTED, 1950-75

Acad. Year	Undergraduates Classified & Unclassified Manoa	EWC	Hilo	Total	Graduates Classified & Unclassified	5th yr. & Prof. Cert.	EWC	Total	Grand Total
1950-51	4,272[a]	–	86[a]	4,358	377[a]	252[a]	–	629	4,987
1951-52	4,009	–	78	4,087	386	125	–	511	4,598
1952-53	3,997	–	80	4,077	385	155	–	540	4,617
1953-54	3,957	–	129	4,086	409	277	–	686	4,772
1954-55	4,004	–	145	4,149	440	232	–	672	4,821
1955-56	4,444	–	228	4,672	231	511	–	742	5,414
1956-57	4,713	–	243	4,956	414	290	–	704	5,660
1957-58	4,906	–	187	5,093	534	309	–	843	5,936
1958-59	5,396	–	225	5,621	636	310	–	946	6,567
1959-60	5,707	–	250	5,957	795	433	–	1,228	7,185
1960-61	6,197[b]	–	260	6,457	912	411	–	1,323	7,780
1961-62	6,664	?	285	6,949	1,060[c]	320	200[f]	1,580	8,529
1962-63	7,379	?	399	7,778	1,083	293	411[f]	1,787	9,565
Projected:					Both				
1963-64	8,125[d]	79[e]	439	8,643	1,510[d]		621[e]	2,131	10,774
1964-65	8,778	84	474	9,336	1,776		756	2,532	11,868
1965-66	9,376	113	506	9,995	2,203		1,022	3,225	13,220
1966-67	9,836	136	531	10,503	2,531		1,229	3,760	14,263
1967-68	10,372	156	560	11,088	2,825		1,439	4,264	15,352
1968-69	10,888	182	588	11,658	3,223		1,643	4,866	16,524
1969-70	11,264	205	608	12,077	3,584		1,850	5,434	17,511
1970-71	11,853	223	640	12,716	3,898		2,012	5,910	18,626
1971-72	12,466	230	673	13,369	4,024		2,070	6,094	19,463
1972-73	13,136	230	728	14,094	4,138		2,070	6,208	20,302
1973-74	13,882	230	769	14,881	4,393		2,070	6,463	21,344
1974-75	14,592	230	808	15,630	4,722		2,070	6,792	22,422
1975-76	15,356	230	850	16,436	5,032		2,070	7,102	23,538

[a] Data 1950-51 to 1959-60 from Harland Bartholomew and Associates, *University of Hawaii Campus Plan*, 1960.

[b] Data from 1960-61 to 1962-63 from Harland Bartholomew and Associates, *op. cit.*

[c] Data from University of Hawaii General Catalogues.

[g] East-West Center data omitted.

[d] Development Plan Committee estimates 1963-64 to 1975-76.

[e] East-West Center estimates 1963-64 to 1975-76.

[f] Estimated.

APPENDIX TABLE 12

TOTAL DEGREE-CREDIT, FALL, DAYTIME ENROLLMENT FOR THE UNIVERSITY OF HAWAII IN 1962-63, AND PROJECTED TO 1975-76 IN TERMS OF TOTAL STUDENTS AND FULL TIME EQUIVALENTS (FTE)[1]

Year	Total Enrollment	FTE
1962-63	9,565	8,183
1963-64	10,774	9,217
1964-65	11,868	10,153
1965-66	13,220	11,310
1966-67	14,263	12,202
1967-68	15,353	13,134
1968-69	16,524	14,136
1969-70	17,511	14,981
1970-71	18,626	15,934
1971-72	19,463	16,651
1972-73	20,302	17,368
1973-74	21,344	18,260
1974-75	22,422	19,182
1975-76	23,538	20,137

[1] Source: Appendix Table 11. FTE computed by Development Plan Committee.

APPENDIX TABLE 13

DEGREES AWARDED IN THE UNITED STATES, 1947–61, AND PROJECTED TO 1969–70

Year	Bachelor's	Master's	Doctor's	Total
1947–48[1]	272,311	42,449	3,989	318,749
1948–49	366,698	50,763	5,050	422,511
1949–50	433,734	58,219	6,420	498,373
1950–51	384,352	65,132	7,338	456,822
1951–52	331,924	63,587	7,683	403,194
1952–53	304,857	61,023	8,309	374,189
1953–54	292,880	56,823	8,996	358,699
1954–55	287,401	58,204	8,840	354,445
1955–56	311,298	59,294	8,903	379,495
1956–57	340,347	61,955	8,756	411,058
1957–58	365,748	65,614	8,942	440,304
1958–59	385,151	69,584	9,360	464,095
1959–60	394,889	74,487	9,829	479,215
1960–61	401,784	78,269	10,575	490,628
		Projected		
1961–62[2]	418,000	78,800	11,400	508,200
1962–63	440,000	83,700	12,300	536,000
1963–64	485,000	90,700	12,700	588,400
1964–65	519,000	100,100	13,200	632,300
1965–66	537,000	104,300	14,000	655,300
1966–67	567,000	104,700	15,200	686,900
1967–68	604,000	109,700	16,500	730,200
1968–69	719,000	128,300	17,400	864,700
1969–70	727,000	139,000	18,100	884,100

[1] Data for 1947–48 to 1960–61 from *Fact Book on Higher Education* 1962, p. 68 (Primary source: OE-54013-60 and OE-54010-61).
[2] Data for 1961–62 to 1969–70 *ibid.* pp. 81, 82, and 83 (Primary source: OE-54002; OE release, 4/16/62).

APPENDIX TABLE 14

DEGREES AWARDED AT THE UNIVERSITY OF HAWAII (OTHER THAN DIPLOMAS AND CERTIFICATES) 1940–63, AND PROJECTED TO 1974–75

Year	Bachelor's	Master's	and	Doctor's	Total
1940–41	342[1]		93[1]		435
1941–42	228		70		298
1942–43	166		46		212
1943–44	155		53		208
1944–45	185		62		248
1945–46	164		51		215
1946–47	220		12		232
1947–48	329		12		341
1948–49	425		19		444
1949–50	569		34		603
1950–51	647		51		698
1951–52	721		41		762
1952–53	684		42		726
1953–54	643		42		685
1954–55	648		44		692
1955–56	644		39		683
1956–57	723		34		757
1957–58	735	54[2]		3[2]	792
1958–59	812	71		4	887
1959–60	881	81		3	965
1960–61	832	109		7	948
1961–62	869	112		2	983
1962–63	893	152		15	1,160
			Projected		
1964–65	1,320[3]	200[4]		20[5]	1,530
1969–70	1,690	400		40	2,140
1974–75	2,190	500		50	2,740

[1] Data from 1940–41 to 1959–60 for bachelor's and from 1940–41 to 1956–57 for master's and doctor's combined, from *Report of Study and Development Commission*, 1960.
[2] Data from 1957–58 to present from Graduate School.
[3] Data projected assuming bachelor's degrees granted will constitute 15 per cent of undergraduate fall daytime enrollment.
[4] Data for advanced degrees projected assuming they will form 8 per cent of graduate fall enrollment.
[5] Data for doctor's degrees projected on the assumption they will form 10 per cent of master's degrees.

APPENDIX TABLE 15

PROJECTED ENROLLMENT OF GRADUATE STUDENTS TO 1975–76

	Fall Semester[1]	Yearly Total[2]
1962–63 (Actual)	(1,771)	(3,790)
1963–64	2,131	4,560
1964–65	2,532	5,418
1965–66	3,225	6,901
1966–67	3,760	8,036
1967–68	4,264	9,125
1968–69	4,866	10,413
1969–70	5,434	11,629
1970–71	5.910	12,647
1971–72	6,094	13,041
1972–73	6,208	13,285
1973–74	6.463	13,831
1974–75	6,792	14,537
1975–76	7,102	15,058

[1] Figures from Appendix Table 11.

[2] Each student enrolled during the academic year and summer session is included once. Summer session transient students from the mainland are not included. The projections are made on the assumption that the ratio of the yearly total to fall enrollment will remain constant.

APPENDIX TABLE 16

ESTIMATED TIME TABLE FOR ACQUISITION OF MAJOR COMPUTER EQUIPMENT

Item	Estimate acquisition cost[1]	Fiscal Year of acquisition
Direct Data Connection	$ 9,600	1963–64
729 Model V Tape Units	29,760	1964–65
1402 Read-Punch	26,160	1965–66
1403 Printer, Model I	27,200	1965–66
Conversion of 8 Model II Tapes to 729 Model V Tapes	12,800	1966–67
1301 Random Access File, Model II	148,000	1968–69
Conversion of 7040 to 7044 System	512,000	1971–72
Computer System 1410, 2 Channel Type	216,000	1974–75

[1] 1963 quotations for purchased equipment—these include 20 per cent educational discount.

APPENDIX TABLE 17

COMPARATIVE LIBRARY STATISTICS FOR THE UNIVERSITY OF HAWAII AND TWELVE SIMILAR STATE UNIVERSITIES, 1961–62[1]

University		Total students[2]	Volumes at year end[3]	Receipts in Year		Library staff[4]	Total operating expend.	Volumes held per student	Expend. per student	Expend. ratio per cent[5]
				Volumes[3]	Periodicals					
University Iowa		11,701	1,096,966	42,413	6,407	86.3	427,652	94	41	1.4
Oklahoma State U.		11,301	654,594	35,573	4,023	56.0	551,758	58	49	2.9
University Kansas		10,791	962,846	39,479	11,338	101.2	881,254	89	82	3.0
University Kentucky		10,597	970,786	52,134	7,474	85.0	762,513	92	70	?
University Georgia		10,440	517,215	59,037	3,905	68.0	550,750	50	53	2.6
Iowa State U.		10,413	528,003	15,065	2,940	51.0	427,652	51	41	1.4
University North Carolina		10,021	1,283,109	57,134	6,248	108.0	1,051,696	126	105	4.0
University Virginia		9,865	1,155,488	50,878	5,435	81.8	642,363	117	65	4.8
University Oregon		9,856	869,457	50,049	7,081	86.5	757,300	88	77	3.3
Florida State U.		9,835	596,453	30,752	5,672	67.0	568,502	61	58	4.0
University Nebraska		9,436	712,963	23,666	8,367	77.0	661,717	76	70	2.8
Oregon State U.		9,027	415,217	18,415	3,587	48.2	480,657	46	53	2.5
Means		10,274	813,594	39,550	6,040	76.3	646,985	79	64	3.0
Medians		10,217	791,210	40,946	5,960	79.4	605,432	82	62	2.9
University of Hawaii[6]	1960–61	9,410	348,312	16,622	1,903	54.0	494,009	37	52	3.4
	1961–62	10,250	415,047	61,449	2,431	61.5	697,577	40	68	4.1
	1962–63	11,335	443,474	28,427	2,395	70.0	619,396	39	54	2.8

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[1] General data from *Library Statistics of Colleges and Universities, 1961–62*. U.S. Department of Health, Education and Welfare. 1963.

[2] Student count is total fall enrollment. (Includes College of General Studies at University of Hawaii and equivalent at other universities.)

[3] Volumes calculated as bound volumes plus certain sections of unbound volumes, microfilms, etc.

[4] Staff includes professionals and non-professionals but not student helpers.

[5] Expenditure ratio is ratio of total libray expenditures to total institutional expenditure for instructional and general purposes.

[6] University of Hawaii data for 1962–63 from library annual report, President's annual report, and 1963–64 catalog.

APPENDIX TABLE 18

LIBRARY EXPENDITURE RATIOS FOR STATE UNIVERSITIES COMPARABLE WITH AND LARGER THAN THE UNIVERSITY OF HAWAII, 1961–62

University	Enrollment[2]	Expenditure ratio, %[3]	University	Enrollment[2]	Expenditure ratio, %[3]
Oregon State U.	9,027	2.5	University Florida	15,329	2.9
University Nebraska	9,436	2.8	Louisiana State U.	16,070	3.7
Florida State U.	9,835	4.0	University Colorado	18,603	?
University Oregon	9,856	3.3	Univ. California, L.A.	18,874	?
University Virginia	9,865	4.8	Rutgers State U.	19,801	?
University North Carolina	10,021	4.0	Wayne State U.	20,605	?
Iowa State U.	10,413	1.4	Penn State U.	21,242	2.0
University Georgia	10,440	2.6	Purdue University	21,282	2.4
University Kentucky	10,597	?	University Washington	23,244	?
University Kansas	10,791	3.0	University Texas	23,368	?
Oklahoma State U.	11,301	2.9	Univ. California, Berk.	23,713	?
University Iowa	11,701	4.2	University Maryland	24,386	4.0
University Utah	12,071	2.8	Michigan State U.	25,022	3.2
Univ. Connecticut	12,132	3.1	Ohio State University	27,410	2.4
Univ. Oklahoma	12,525	5.5	University Michigan	28,240	2.9
Univ. Tennessee	13,457	3.7	Indiana University	28,975	?
Arizona State U.	13,492	4.9	University Illinois	32,088	2.7
University Arizona	14,164	4.4	University Wisconsin	32,835	2.4
S. Illinois Univ.	15,007	3.5	University Minnesota	44,130	2.3
University Missouri	15,223	5.3			
Averages of expenditure ratio:	Mean 3.3 Median 3.0				

[1] Data from *Library Statistics of Colleges and Universities, 1961–62.* U.S. Department of Health, Education and Welfare. 1963.

[2] Enrollment is total for fall 1961.

[3] Expenditure ratio is ratio of total library expenditures to total institutional expenditure for instructional and general purposes. Question marks indicate unavailable data.

APPENDIX TABLE 19

LIBRARY EXPENDITURE RATIOS[1] FOR THE UNIVERSITY OF HAWAII, 1958–63

Year	Total library expenditure[2]	Library expenditure ratio
1958–59	$262,510	3.4%
1959–60	339,930	3.2
1960–61	494,009	3.4
1961–62 with EWC	697,577	4.1
(1961–62 without EWC)	(520,956)	(3.1)
1962–63	619,396	2.8
Average ratios based on:		
total library expenditures		3.4
library expenditures without EWC		(3.2)

[1] Library expenditure ratio is ratio of total library expenditures to total institutional expenditures for instructional and general purposes.

[2] From *Library Statistics of Colleges and Universities*, U.S. Department of Health, Education and Welfare for 1958–62 and reports to HEW for 1962–63.

APPENDIX TABLE 20

PROJECTION OF POSITION COUNT AND COSTS (MILLIONS OF DOLLARS) OF PERSONAL SERVICES, UNIVERSITY OF HAWAII, 1962–63 TO 1975–76

Year	Board of Regents Positions No.[1]	Board of Regents Positions Average[2] cost (dollars)	Board of Regents Positions Total cost (millions of dollars)	Civil Service Positions No.[1]	Civil Service Positions Average[2] cost (dollars)	Civil Service Positions Total cost (millions of dollars)	Total number of positions	Student help cost (millions of dollars)	Grand total cost (millions of dollars)
1962–63	931	9,367	8.7	606	4,422	2.7	1537	0.3	11.7
1963–64	1048[3]	9,367	9.8	682[3]	4,422	3.0	1730[3]	0.3	13.1
1964–65	1155[3]	10,304	11.9	752[3]	4,643	3.5	1907	0.3	15.7
Adjusted									
1964–65	1223[4]	10,304	12.6	796[4]	4,643	3.7	2019[4]	0.3	16.6
1965–66	1362	10,304	14.0	887	4,643	4.1	2249	0.4	18.5
1966–67	1470	11,334	16.7	957	4,875	4.7	2427	0.4	21.8
1967–68	1582	11,334	17.9	1030	4,875	5.0	2612	0.5	23.4
1968–69	1702	12,467	21.2	1108	5,119	5.7	2810	0.5	27.4
1969–70	1804	12,467	22.5	1174	5,119	6.0	2978	0.6	29.1
1970–71	1919	13,714	26.3	1249	5,375	6.7	3168	0.6	33.6
1971–72	2005	13,714	27.5	1305	5,375	7.0	3310	0.6	35.1
1972–73	2091	15,085	31.5	1361	5,644	7.7	3452	0.7	39.9
1973–74	2198	15,085	33.2	1430	5,644	8.1	3628	0.7	42.0
1974–75	2308	16,594	38.3	1502	5,926	8.9	3810	0.8	48.0
1975–76	2423	16,594	40.2	1577	5,926	9.3	4000	0.8	50.3

[1] Position count projected on the basis of Full Time Student Equivalents (FTE).

[2] Projection of average cost for BOR positions is based on a 10 per cent increase on alternate years, for CS positions 5 per cent.

[3] Projected from 1962–63 positions in proportion to FTE (Appendix Table 12). The actual total in 1963–64 was 1689.

[4] Position count adjusted to a more adequate base for further projections. See text pp.90–91.

APPENDIX TABLE 21

PROJECTION OF COSTS (MILLIONS OF DOLLARS) OF "CURRENT EXPENSES" (B FUNDS) AND EQUIPMENT (C FUNDS) FROM 1964–65 TO 1975–76, UNIVERSITY OF HAWAII

Year	Current Expenses (B)	Equipment (C)
	Actual	
1962–63	2.0	0.7
1963–64	2.3	0.9
	Estimated and Projected	
1964–65[1]	2.7	1.1
1964–65 Adj.[2]	3.1	1.7
1965–66	3.5	2.0
1966–67	3.8	2.2
1967–68	4.2	2.4
1968–69	4.6	2.6
1969–70	5.0	2.8
1970–71	5.4	3.1
1971–72	5.8	3.3
1972–73	6.2	3.5
1973–74	6.6	3.7
1974–75	7.1	4.0
1975–76	7.6	4.3

[1] Estimated on the basis of personnel needs alone.

[2] Adjusted for catch-up to approach adequate level. Subsequent years projected from this base in proportion to FTE.

APPENDIX TABLE 22

UNIVERSITY OF HAWAII FLOOR SPACE, 1962 AND 1963

Type of space	Floor space, square feet Fall 1962	Fall 1963
Assignable space		
Classrooms[1]	105,340	104,600
Laboratories	197,905	213,164
Offices	168,660	178,382
Library	117,468	117,468
Union	44,703	68,103
Phvsical plant	83,945	109,463
Other assignable (approx.)[2]	55,482	65,051
Total assignable (approx.)	773,503	856,231
Non-assignable (approx.)[3]	386,751	422,438
Total gross (approx.)[4]	1,160,254	1,278,669

[1] Classroom space decreased due to withdrawl of Gartley Hall for renovation.

[2] Other assignable space, which includes the gymnasium, is estimated at total gross space less non-assignable space.

[3] Non-assignable space estimtaed at 1/2 assignable space for certain service buildings plus 1/3 gross space for remaining buildings.

[4] Total gross space estimated at 3/2 assignable space for certain buildings plus measured space for remaining buildings.

APPENDIX TABLE 23

ESTIMATED GROSS FLOOR SPACE REQUIREMENTS PER STUDENT, U.S. COLLEGES AND UNIVERSITIES IN 1950[1]

Type of institution	Average gross area required per full-time student, square feet All Institutions	Public institutions
All types	182	181
Universities	186	183
Colleges of liberal arts and science	180	169
Teachers colleges and normal schools	226	234
Professional and technical schools	180	179
Junior colleges	157	144

[1] U.S. Office of Education survey in 1948. Quoted by Harland Bartholomew and Associates, *University of Hawaii, General Campus Development Plan* (Honolulu, 1960).

APPENDIX TABLE 24

Gross Floor Space for Instruction, Research, Administration and Service, Manoa Campus, 1962–65

Year	Total gross space, sq. ft.	Fall enrollment, FTE students	Space per student sq. ft./FTE	Deficit sq. ft.[1]	Space changes during year, sq. ft.[2]	
					Gains	Losses
1962–63	1,160,254	7,842	147	31,730	145,345	26,930
1963–64	1,278,669	8,842	144	65,315	133,564	11,994
1964–65	1,400,239	9,748	143	81,457	154,890	37,492
1965–66	1,517,637	10,877	139	135,667		

[1] Deficit measure from space requirement based on 152 sq. ft./FTE standard.

[2] Gains and losses represent buildings constructed, demolished, converted, or renovated, as tabulated below.

	Gains	*Losses*
1962–63	Multipurpose building Hawaii Institute of Geophysics EWC Auditorium offices Food service building New shops and warehouses Keller Hall annexes (converted)	Gartley Hall (temporary, for renovation) Farrington Hall Offices
1963–64	Wist Hall addition Student health service Classroom Bldg. #3 Gartley Hall (restored to service) Snack bar #1	Farrington Hall
1964–65	Graduate Research Library Classroom Bldg. #4 (Estimated from planning request 1963–64)	Hawaii Hall Annnex Crawford Hall Annex Ceramics Old shops and warehouses (Dates of demolition may vary)

APPENDIX TABLE 25

Gross Floor Space for Instruction, Research, Administration and Service, Manoa Campus, 1965–75

Year	Total gross floor space, fall million sq. ft.	Fall enrollment, FTE students	Space per student sq. ft./FTE	Deficit, million sq. ft.[1]	New space, million sq. ft.	Total construction, million sq. ft.[2]
1965–66	1.518	10,877	139	.136	0.153	.161
1966–67	1.671	11,748	142	.115	0.153	.161
1967–68	1.824	12,655	144	.100	0.153	.161
1968–69	1.977	13,633	145	.095	0.147	.154
1969–70	2.124	14,461	146	.074	0.147	.154
1970–71	2.271	15,387	148	.068	0.136	.143
1971–72	2.407	16,076	150	.037	0.136	.143
1972–73	2.542	16,746	152	.003	0.136	.143
1973–74	2.678	17,603	152	–.002	0.136	.143
1974–75	2.814	18,491	152	–.003	0.136	.143
1975–76	2.950	19,410	152	.000	0.136	.143

[1] Deficit measured from space requirement based on 152 sq. ft./FTE standard.

[2] Total construction in year is new space plus 7,500 sq. ft. for replacement and remodelling. Now space is estimated to smooth annual construction requirements 1965–68, 1968–70, 1970–75. Replacement is estimated to permit replacement of all temporary buildings by 1975. Remodelling of Dean and Hawaii Halls is included at 2/3 of actual space, to allow for lower unit costs.

APPENDIX TABLE 26

COSTS OF PROVIDING ADDITIONAL BUILDING SPACE FOR INSTRUCTION, RESEARCH, ADMINISTRATION AND SERVICE, MANOA CAMPUS, 1964–75

Year	Total construction thousand sq. ft.[1]	Unit cost $/sq. ft.[2]	Costs, $ million				
			Planning[3]	Construction[4]	Equipment[5]	Miscellaneous[6]	Total
1964–65[7]	154.9	28.57	.476	3.950	.141	.600	5.167
1965–66	160.7	30.00	.759	4.097	.822	.600	6.278
1966–67	160.7	31.50	.797	4.302	.868	.600	6.567
1967–68	160.7	33.08	.804	4.518	.911	.600	6.833
1968–69	154.3	34.73	.844	4.556	.957	.600	6.957
1969–70	154.3	36.47	.866	4.785	.965	.600	7.236
1970–71	143.3	38.29	.931	5.023	1.013	.600	7.567
1971–72	143.3	40.20	.977	5.274	1.064	.600	7.915
1972–73	143.3	42.21	1.026	5.538	1.117	.600	8.281
1973–74	143.3	44.32	1.077	5.814	1.173	.600	8.665
1974–75	143.3	46.54	1.131	6.106	1.231	.600	9.068
1975–76	143.3	48.86	1.188	6.410	1.293	.600	9.491

[1] From Appendix Table 25.

[2] Unit cost is cost of planning and construction per sq. ft., based on $30.00 average in 1965–66, an increase of 5 per cent per year.

[3] Planning cost is 15 per cent of cost of planning plus construction, for space to be constructed in following year.

[4] Construction cost is 85 per cent of cost of planning plus construction.

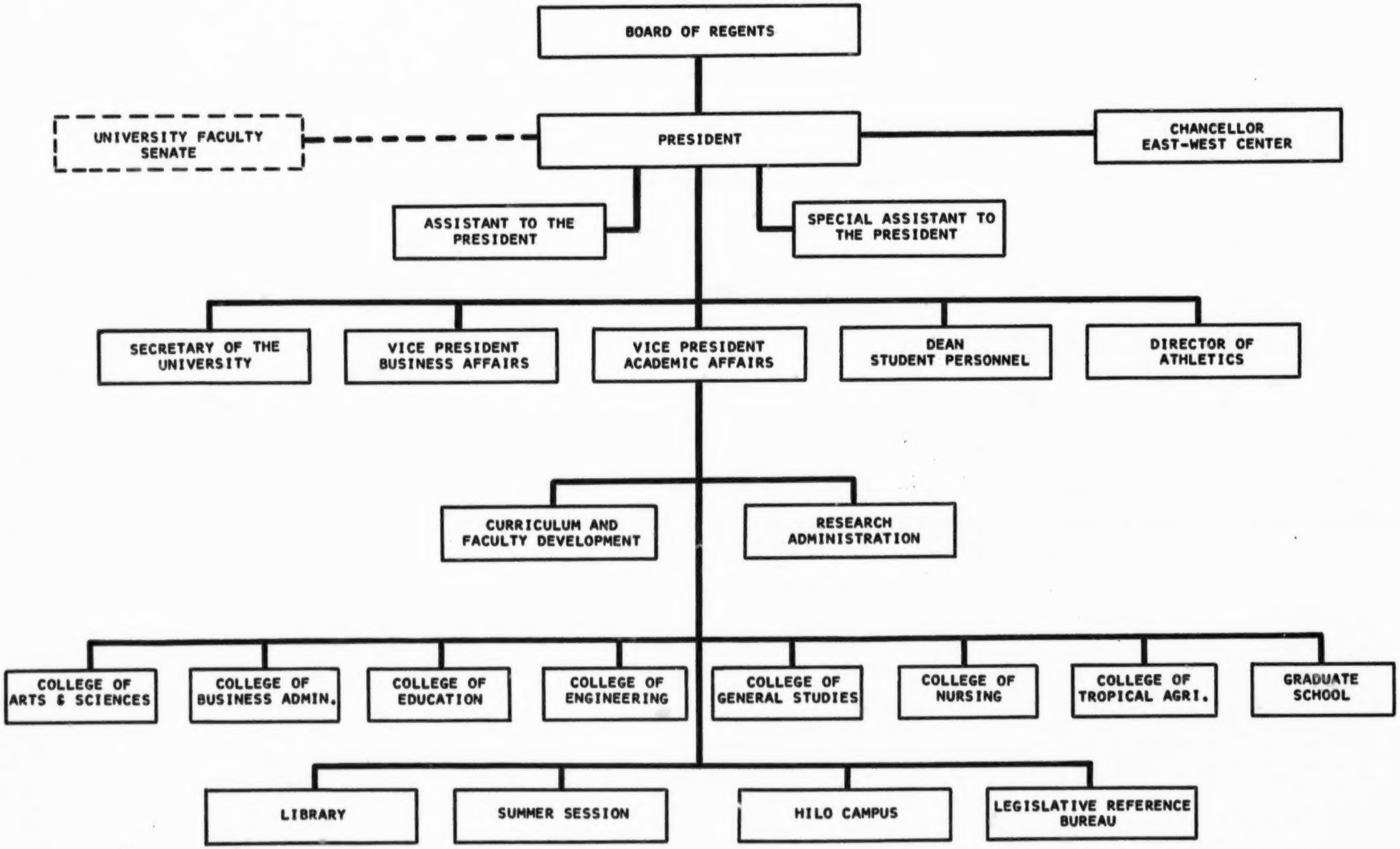
[5] Equipment and furnishing cost is 18 per cent of cost of planning plus construction, for space to be constructed in previous year.

[6] Miscellaneous costs include paving, major utilities, athletic facilities, non-amortized housing construction and minor capital improvements.

[7] Figures for 1964–65 are based on plans being prepared in 1962–63.

APPENDIX FIGURE 1

UNIVERSITY OF HAWAII PLAN OF ORGANIZATION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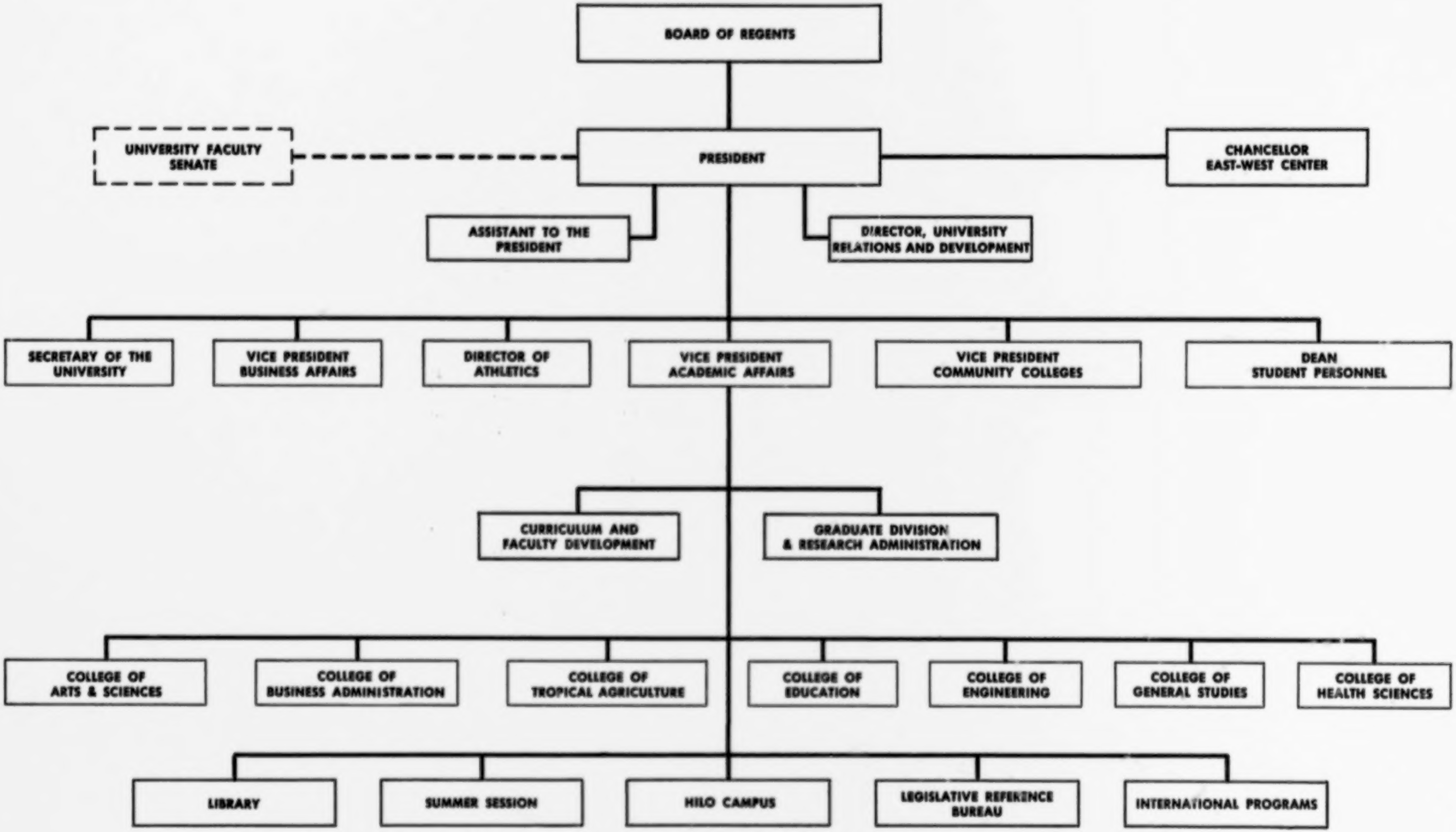
COLLEGE OF GENERAL STUDIES
COLLEGE OF NURSING
COLLEGE OF TROPICAL AGRI.
GRADUATE SCHOOL
LIBRARY
SUMMER SESSION
HILO CAMPUS
LEGISLATIVE REFERENCE BUREAU

FIRST SUPPLEMENT TO THE
ACADEMIC DEVELOPMENT PLAN
OF THE
UNIVERSITY OF HAWAII

Honolulu, Hawaii

January 196

UNIVERSITY OF HAWAII
PLAN OF ORGANIZATION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LEGISLATIVE REFERENCE BUREAU
INTERNATIONAL PROGRAMS

DECEMBER 1965

FIRST SUPPLEMENT TO THE
ACADEMIC DEVELOPMENT PLAN
OF THE
UNIVERSITY OF HAWAII

Academic Development Plan Committee:	Bruce J. Cooil
	Doak C. Cox
	Robert W. Hiatt
	Robert M. Kamins, Chairman
	Alfons L. Korn
	Thomas D. Murphy
	Harry T. Oshima
	Albert L. Tester
	Douglas S. Yamamura

FOREWORD

Since the adoption of the Academic Development Plan almost two years ago it has been fundamental in shaping the University's progress. However, as was then pointed out, unless the Plan is kept current it would cease to be a dynamic guide for a developing university and would become instead the dead hand of the past. Thus, this supplement to the Academic Development Plan is but the first in a series which will take stock of our progress and look ahead to further opportunities for this institution to improve quality of program--including a concern for the individual student--during a time when it would be so easy to let the quantitative overwhelm us.

The magnitude and complexity of the University of Hawaii System precludes making a written analysis of all programs at frequent intervals. Instead the Academic Development Plan Committee has chosen to select for attention each year those aspects of the system which, for reasons such as rapid changes in fields of knowledge or the appearance of desirable new programs and objectives, seem most in need of appraisal. This year developmental plans for the newly formed College of Health Sciences (comprising the Schools of Medicine, Nursing and Public Health) were reviewed with two considerations in mind: the close coordination required among these Schools; the potential for University leadership in the health fields in the Pacific area. The programs of the School of Social Work were considered with an eye to the changing character of modern society and the attendant responses of social agencies, coupled with the critical shortage of trained social work personnel. National attention, and federal support, increasingly focuses on the prevention of social problems, thus pointing to the need for fundamental changes in the field of social welfare.

Two other matters are now being considered via different mechanisms which probably will eventuate in revision of the Academic Development Plan. One of these has to do with the preparation of teachers. The 1965 Legislature established a committee and supplied funds for a consultant to study this significant aspect of the University's program. Work is under way, and the results of the study will be issued rather soon. Recommendations will then be given consideration by those charged with keeping the Academic Development Plan up-to-date.

The second has to do with all-University curricular requirements for undergraduate students at the University of Hawaii. This job was of such magnitude that it was assigned to a separate committee, and its report is now under consideration by the appropriate bodies. But if this report or a modification of it should be adopted, this will mark still another change in our Plan.

First steps in the implementation of a Community College System were taken when the University assumed responsibility for several technical schools which, when university-parallel curriculums are added, will become full fledged community colleges in 1967 and 1968. The Committee has recognized that the success of the total University of Hawaii System depends largely upon appropriate articulation, academically and administratively, and offers guidelines for achieving reasonably uniform and high academic standards well in advance of detailed planning operations.

Perhaps surpassing all other planning factors in significance this year has been acceptance by the Board of Regents of a policy stating that maximum enrollment on the Manoa Campus should approximate 25,000. The Committee has weighed both the advantages and disadvantages of "bigness" and concludes that with continuous scrutiny, and revision where necessary of the Academic Development Plan, our projected size should result in a richer educational and cultural experience. Establishment of a definite size for Manoa Campus development required further efforts to refine enrollment projects, for our actual enrollment in 1965 proved to be nearly 10 per cent above the number estimated in 1963. While the 25,000 student body could be reached as early as 1970 or as late as 1975, our best estimate is 1973. The portent of this rapid increase for faculty, facilities and teaching innovations on the Manoa Campus underscores the necessity for intensified planning, but of even greater urgency is the need to start planning now for a second undergraduate campus.

Finally, the continued qualitative improvement of the total University, which in no small part results from increasingly superior products of Hawaii's elementary and secondary schools, is most reassuring. Recruitment of superior faculty members, both the young and the more experienced, has progressively become less difficult, largely because of increasing encouragement given us by both the executive and legislative branches of our state government, and by major expressions of interest in the University's development by our alumni and the business community, the latter assistance being so necessary for that margin of greatness to which the University aspires. One of the important and easily demonstrable measures of a faculty's stature is the extent to which they are successful in the national competition for funds, both public and private. Our escalating success in this field is spectacular. I am pleased to state that we now rank among the top 40 universities in the United States and among the top 25 of the state universities in our programs of natural and social sciences supported by the National Science Foundation, and I am heartened even more by the conviction that while our total educational activity is first-rate, our faculty, students, and administration are seeking to improve it continually.

Thomas H. Hamilton
President

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TWO YEARS UNDER THE PLAN

The Academic Development Plan was drafted in the last half of 1963 and adopted at the beginning of 1964. During the past two years the Plan has served as the basis for guiding the University's growth; it has helped identify the areas of emphasis for which fiscal support has been requested. Generally the executive branch and the Hawaii Legislature have been responsive to the requests, as have an increasing number of federal and non-governmental granting agencies.

Structural Changes

In conformity with the Academic Development Plan, a large number of additions to and improvements in the programs of the University have taken place between January 1964 and January 1966. Organizationally, the two largest changes were the establishment of the College of Health Sciences and of a system of comprehensive two-year community colleges. These major additions are discussed in ensuing sections of this supplement.

The creation of the College of Health Sciences gave occasion to implement a policy suggested by the Faculty Senate, that regular instructional departments within the Graduate School be transferred to the colleges of the University. To the new Health Sciences College went Biochemistry and Biophysics, Genetics, and Public Health, (as well as the Nursing programs, now in a School) and the Speech Pathology and Audiology program formerly in the Speech Department. To Arts and Sciences went American Studies, Linguistics, Oceanography, and the Overseas Operations Program. The Graduate School was renamed the Graduate Division; it now is primarily devoted to serving graduate students and overseeing their curricula, but retains the School of Social Work, which is discussed in a later section.

The chart inside the front cover shows the current organizational structure of the University of Hawaii. The public institution for higher learning of our state is now more descriptively termed the University of Hawaii System, including as it does several campuses with a wide range of programs, academic and non-academic, credit and non-credit.

Program Changes--some illustrations

The Academic Development Plan made scores of recommendations for improving instructional and research programs of the University; many have been implemented. For example, the Plan recommended that the quality of instruction be improved primarily within existing programs, with only a selective addition to the number of curricula. Among the areas identified for selective expansion were Linguistics at the doctoral level, American Studies at the master's level, nursing at the master's level, and also within a two-year associate program. Other degree programs recommended in the Plan have been formulated and are now being considered for adoption.

Further, the Academic Development Plan stated that existing instructional programs and departments should be reorganized "in light of new knowledge bringing together interrelated disciplines." In that light, a Department of Geosciences now incorporates the fields of geology, meteorology, and solid earth geophysics, while the Department of Oceanography combines elements from the physical and biological sciences, basic and applied, as they relate to the study of the seas. A new graduate course in administration is offered under the joint auspices of the Colleges of Business Administration and Education and the Department of Political Science.

With respect to research, the following may serve as examples of developments recommended by the Plan which are being carried out: establishment of the Education Research and Development Center in the College of Education; creation (with federal support) of the Juvenile Delinquency and Youth Development Center; strengthening of the facilities and staff of the Statistical and Computing Center; planning and financing of a major science research base at Kewalo Basin; expansion of the Pacific Biomedical Research Center (this has occurred rapidly with the aid of extramural support) and of the Social Science Research Institute (where such support is harder to get and growth has been slower).

Library Programs

No aspect of the University received greater emphasis in the Academic Development Plan than did the library. With strong state support a great deal has been accomplished in the past two years toward accomplishing the goals set forth in the Plans building up the collection with additional purchases of $200,000 annually; binding periodicals to get them on the shelves for use ($50,000 per year); hastening the reclassification of books from the old Dewey System to that of the Library of Congress; speeding up cataloguing. Means of facilitating the circulation of books are being worked on. New library staff members are being recruited with faculty status, as recommended by the Plan, and those already on the staff who have the appropriate academic training and background are being accorded this status.

Since adoption of the Academic Development Plan, specifications and funding for the Graduate Library have been completed as well as site preparation. Plans are ready for moving some of the collection from Sinclair Library to the new building when it is completed in 1967, and for the conversion of Sinclair into a library for undergraduates.

Undergraduate Instruction

Many recommendations of the Academic Development Plan stemmed from a concern that undergraduate instruction at the University have the vigor, interest and support which generally characterize our graduate and research programs. Thus, the Plan proposed that all freshmen on the Manoa Campus be enrolled in the College of Arts and Sciences where they would participate in a program of studies which placed emphasis on general or liberal education, rather than on specialized training.

This recommendation has not been implemented, in part because of the virtual absence of means within the College for offering adequate academic advising to its present thousands of freshmen, let alone additional hundreds from other colleges. To remedy this grave deficiency, the Plan proposed that staffing be provided for a program of academic advising for all lower division students. The last legislature established five positions, which have been divided into eight half-time advisory assignments for members of the College faculty, plus a full-time clerical position. Initial experience has established the necessity of the program and need of expansion to serve a larger number of students.

With this start, and with the assurance that professional school advisors will be available to lower division students, the College of Arts and Sciences has indicated its willingness to accept freshmen and sophomores who intend to major in Business Administration or Nursing--this on the initiative of the professional schools. The College of Education has expressed its interest in a similar arrangement, that is, accepting students in the junior year after they have completed the lower division program in Arts and Sciences.

However, even if all students were enrolled in one college--and the Colleges of Engineering and Tropical Agriculture have no present interest in the idea--it would not necessarily make for a common freshman year; the reason being that freshmen are not common, not alike in their educational attainments. Some have completed college algebra or calculus in high school, but are not proficient in English or the social sciences; others have completed the nationally established Advanced Placement Examinations in English or a foreign language, but are not competent in mathematics or history.

Instead of a common freshman year, in 1965 the University adopted the idea of a core of general education to be required of all baccalaureate programs in all units of the University System. At this writing the core is under consideration. It identifies particular general education goals in the fields of the natural and social sciences, the humanities, communications, quantitative reasoning, world civilization, and provides alternative means of reaching the goals: passing comprehensive examinations, passing particular courses in each of the fields, passing interdisciplinary courses.

The Academic Development Plan recommended support for expanded Honors programs. Five additional positions were provided by the last legislative session; these have been used to stimulate the extension of the lower division Selected Studies Program and the upper division Honors Programs to the professional schools and to the Hilo Campus, as well as to strengthen the colloquium and experimental courses within Arts and Sciences. The number of students participating in the Honors programs increased from approximately 200 in 1963-64 to 345 this academic year.

Faculty Recruitment and Retention

The importance of attracting and holding a good faculty against national competition in the marketplace was discussed briefly but pointedly in the Academic Development Plan. It recommended that salaries be kept at a level which would enable the University to compete with other institutions of higher learning which are also seeking to improve themselves; the salary schedule just adopted with 1965 appropriations should make this possible.

Also recommended was some means for reimbursing new faculty members for the considerable costs of relocating in Hawaii from the mainland or abroad. The last legislative session provided funds sufficient to pay for the costs of transportation per se, and this provision was of great help in recruitment during the past several months. Equally helpful would be funds sufficient to pay at least part of the costs of moving household effects, personal library, etc., as the University of California provides.

Modest increases in the appropriation for faculty travel have enabled the University to carry out, at least partially, a final recommendation of the Academic Development Plan for recruiting. Most departments can now, through their chairman or other faculty member, attend the annual professional meetings which have become the central markets for academe. Substituting interviews for "picture-bride" recruiting has taken much of the risk out of staffing the various programs of the University. While interviewing cannot prevent all mistakes, it should significantly reduce the number of appointments which do not benefit the University.

The Space Problem

A principal conclusion of the study underlying the Academic Development Plan was that the need for space within buildings for classrooms, laboratories, offices, libraries, student functions and the many other uses of a university had been growing more rapidly than it had been provided, and that an accelerated building program would be necessary to accommodate students, faculty and staff with any reasonable adequacy.

The record of the past three years heavily underscores the conclusion and makes more obvious the growing criticalness of space needs. In 1962-63, the last year for which data of actual experience were available to the persons who worked on the Plan, it was estimated that the Manoa Campus lacked some 31,000 square feet of gross floor space ("gross" including corridors, stairways, closets, etc.), calculated on a standard of 152 square feet per full-time student[1], for its then current population.

Table 1* shows that since the fall of 1962 student enrollment has gone up by about half and the size of the faculty by about two-thirds. However, as Table 2* details, floor space within the buildings of Manoa has only been increased by approximately one-third. The annual record is reported in Table 3*, which shows increasingly critical space squeeze (especially accelerated in 1964-65 when only minor construction was completed); between 1962-63 and the present academic year floor space for student shrank by about one-eighth.

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* Follows this section

Next year the shortage of space will be worse. The campus population will continue to rise, but the only construction which will surely be available is the addition to Wist Hall.

The greatest pinch is in office space. Classrooms and laboratories are also crowded, but, by extension of the instructional day and still tighter scheduling, the expected increase in students can be accommodated next year. However, such adjustments cannot be made with respect to faculty offices, and more space must be provided--on campus if possible, off campus if necessary.

The bright light in this prospect is that the University has now developed a plan for the construction of the campus (and is working on one for Hilo and the community colleges, each of which has its particular problems and opportunities). Further, the recent appointment of an assistant to the President who will coordinate planning for the physical development of the Manoa Campus gives some assurance that the academic program of the campus, its burgeoning student body and faculty will all be accommodated in a physical plant adequate to the purposes of the University.

Footnote

1/ More precisely, per F.T.E., the statistical equivalent of full-time students.

TABLE 1

Enrollment, Student Credit Hours, and Faculty
University of Hawaii, Manoa Campus
1962-65

Fall Semester	Total Student Enrollment	Total Student Credit Hours	Faculty Members*
1962	9,166	125,069	1,200
1963	10,466	139,739	1,400
1964	11,641	156,814	1,600
1965	13,587	178,012	2,000

* Includes graduate assistants and research assistants as well as other appointees of the Board of Regents. Since the number of personnel varies over the semester, expressed in hundreds.

TABLE 2

University of Hawaii Floor Space, Manoa Campus*
1962-65

NOTE: The various types of space are defined as follows:

Classrooms--Includes classrooms assigned by Office of Admissions & Records; teaching space under departmental control; and Laboratory School classrooms.
Laboratories--Instructional, Laboratory School, and research laboratories.
Offices--Instructional, Laboratory School, and research offices.
Library--Sinclair Library and areas used as libraries in research units and departments.
Other assignable--Infirmary, gym, auditoria, dining rooms, kitchens, shower-locker-bathrooms, machine rooms, storerooms, greenhouses, animal rooms, garages, barber shop, sales areas, etc.
Non-assignable--Building service area and other space not falling within above categories.

Type of Space	Floor Space, Square Feet			
	Fall 1962	Fall 1963	Fall 1964**	Fall 1965**
TOTAL	1,160,254	1,278,669	1,408,585	1,516,225
Assignable Space:	773,503	856,231	984,413	1,052,565
Classrooms	105,340	104,600	165,089	182,285
Laboratories	197,905	213,164	174,772	197,544
Offices	168,660	178,382	214,456	250,649
Library	117,468	117,468	85,087	83,630
Other assignable	184,130	242,617	345,009	338,457
Non-assignable Space	386,751	422,438	424,172	463,660

* Excluding East-West Center and housing.

** Data from University of Hawaii Office of Campus Development.

TABLE 3

Gross Floor Space For Instruction, Research, Administration and Service
University of Hawaii, Manoa Campus
1962-65

Year	Total Gross Space, Sq. Ft.	Fall Enrollment, FTE Students*	Space Per Student: Sq. Ft./FTE	Space Changes During Year, Sq. Ft.**	
				Gains	Losses
1962-63 ...	1,160,254	8,487	136.71	145,345	26,930
1963-64 ...	1,278,669	9,690	131.96	133,564	11,994
1964-65 ...	1,408,585	10,778	130.69	27,467	--
1965-66 ...	1,516,225	12,580	120.53	116,424	10,712

* "Full-Time Equivalent Students" arrived at by applying a 92.59 per cent conversion factor to Manoa Campus student enrollment, the ratio of full-time equivalent students to student enrollment calculated in Fall 1965.

** Gains and losses represent buildings constructed, demolished, converted or renovated, as shown below.

	Gains	Losses
1964-65	Hale Laulima converted; new Student Health Services Building; new snack bar	--
1965-66	Gartley Hall renovated; new Kuykendall Hall; 10 new faculty housing units	Old snack bar; Wist Hall Annex #3; Nutrition Lab Annex A; Warehouse #2
1966-67	Wist Hall addition	--

FUTURE ENROLLMENTS AND THEIR IMPLICATIONS

Enrollment on the Manoa Campus has been growing with almost startling rapidity. The original Academic Development Plan projected an enrollment of approximately 23,000 students in 1975-76, queried the adequacy of campus acreage to properly serve a student body of such size, but on the basis of "first things first," concentrated on what loomed as more immediately pressing problems. It noted, however, that the matter would be of large importance in the Campus Development Study then being initiated.

As studies by the Academic Development Plan Committee and the Task Force on Campus Planning progressed, it became increasingly apparent that projections of future enrollment--as at other state universities--would have to be revised upwards, as the magnitude of the increased demand for higher education made itself felt in 1964 and 1965 enrollments. In 1965 the University admitted 873 more enrollees than it had expected. There were unpredictably large applications from students whose families had recently removed to the Islands, and from students who, in the past, probably would have entered mainland schools. Both trends seem likely to continue during the next decade.

It also became obvious that the projection of enrollments to 1975-76 was inextricably tied up with that of a cut-off point in student population for the Manoa Campus. If enrollment were to reach 23,000 in a few years, could all these students be properly accommodated on this site? And if applications continued to rise, how many more could be accepted before educational effectiveness began to decline as a result (among other things) of crowding, administrative unwieldiness, and impersonality of instruction?

Fortunately, some guidelines were available in the experience of other and larger state universities, which tended to show that the optimum maximum in student accommodation was around 25,000, after which the decline in effective functioning became increasingly noticeable. At the same time, the studies of our Campus Development Plan Committee and of the architectural firm engaged as the University's consultant indicated that--contrary to previous expectation--it would be possible not only to accommodate adequately a population of that size on the Manoa Campus, but also to provide an intellectually stimulating and esthetically pleasing environment.

Current projections of future enrollments, made by the University's Institutional Research Committee, confirm the conviction that estimates must be revised upwards, and indicate that enrollment in daytime programs on the Manoa Campus might well reach 25,000 in 1973, and would almost certainly do so in 1975 (see Table 4). Due to the number of variables which enter into such projections, they cannot be precise;1/ nevertheless this revised forecast pointed up the need for an immediate decision on cut-off point if effective long-range planning is to be continued.

TABLE 4

University of Hawaii Enrollment Projections 1966-75*

Year	Grand Total			Manoa Campus**			Hilo Campus	Community Colleges
	Total	Undergraduates	Graduates	Total	Undergraduates	Graduates		
1966...	15,199	12,143	3,056	14,674	11,618	3,056	525	-
1967...	16,861	13,409	3,452	16,282	12,830	3,452	579	-
1968...	18,991	15,114	3,877	17,167	13,290	3,877	637	1,187
1969...	21,125	16,792	4,333	18,749	14,416	4,333	699	1,677
1970...	23,427	18,608	4,819	20,415	15,596	4,819	765	2,247
1971...	25,891	20,555	5,336	22,154	16,818	5,336	835	2,902
1972...	28,527	22,646	5,881	24,091	18,210	5,881	908	3,528
1973...	31,203	24,745	6,458	26,118**	19,660	6,458	986	4,099
1974...	34,035	26,970	7,065	28,237**	21,172	7,065	1,067	4,731
1975...	37,020	29,318	7,702	30,441**	22,739	7,702	1,152	5,427

* All credit courses, calculated in Fall semester. Includes all of Manoa Campus and Hilo Campus enrollments plus those students in the community colleges who may be in college parallel programs.

** Excess over 25,000 would be enrolled at another campus.

This decision has been made and approved by the Board of Regents. Enrollment will stop at 25,000 students, seemingly in the next six to eight years. Planning of academic and physical development will hereafter proceed on that basis.

Implications of a Limited Manoa Enrollment

Several implications of this decision deserve exploration here. Obviously the number of students qualifying for and desiring enrollment on the Manoa Campus is not going to be self-limiting. Hence the University must decide which students, now acceptable on this campus, will be diverted and where. As in other states faced with this problem, the solution will certainly involve the creation of new campuses. The new campuses rarely, if ever, have the same character as the original campus, or as each other for that matter. Each campus of the University of California, for example, has its particular areas of specialization and its own qualities, partly through the accidents of history, partly by deliberate choice of the University.

The University of Hawaii has already started to multiply its campuses, originally through the creation of the Hilo Campus, and most recently through the initiation of the Community College System. The Hilo Campus has offered a two-year program; its students, if they continue, for the most part transfer to the Manoa Campus. The Community Colleges, although begun as technical schools transferred from the Department of Education, will also shortly develop liberal arts programs providing for transfer to the University, as will be discussed in a later section of this supplement.

The growth of the Hilo Campus and the commencement of the transfer programs of the Community Colleges will have a complex impact on enrollment at the Manoa Campus. Initially, there will be some voluntary diversion of freshmen and sophomores who would otherwise have gone to Manoa. After two or three years, the upper division classes at Manoa will be swelled by transfers from the two-year campuses, some of whom would not have gone to college without the economy and convenience offered by a state-wide system of community colleges. As the Manoa enrollment limit is approached and reached, increasingly large diversions of students from the Manoa Campus will have to be made, and by then the faculties and facilities of other campuses will have to be ready.

A major policy implicit in this anticipated pattern of student distribution should be explicitly stated: for the foreseeable future, the Manoa Campus will remain _the_ University (i.e. multi-college) campus of a state-wide system of colleges and campuses. This policy has two correlaries:

1. The student body on the Manoa Campus will continue to include lower and upper division undergraduate students as well as graduate students, but the amount of graduate work will increase relative to undergraduate studies;

2. The Graduate Division and the professional colleges will remain on the Manoa Campus.

Within the limitations set by this policy there still remain many undecided questions. Presumably the first and easiest group to be partly diverted from the Manoa Campus will be the lower division undergraduate liberal arts students, which the Hilo Campus and the community colleges should shortly be set up to receive. However, by policy based on the desirability of keeping the entire range of higher education at the University campus,[2/] not all of this group should be diverted away from Manoa. To what limit should the lower division enrollment on the Manoa Campus ultimately be held? Should lower division enrollment be allowed to fall to this limit before upper division students are diverted, or should some ratio between lower and upper divisions students be maintained? As diversion of upper division students becomes necessary, should one or more of the two-year colleges be converted to a four-year institution or should a new four-year campus be established? In either case, where will the four-year college or colleges be?

At the time the Academic Development Plan was prepared, these questions seemed so remote as not to require consideration, but now it is apparent that, considering the rate of increase of enrollment and the time required to plan, acquire land for, construct, and staff a new campus, only a year or two remains before answers will have to be formulated.

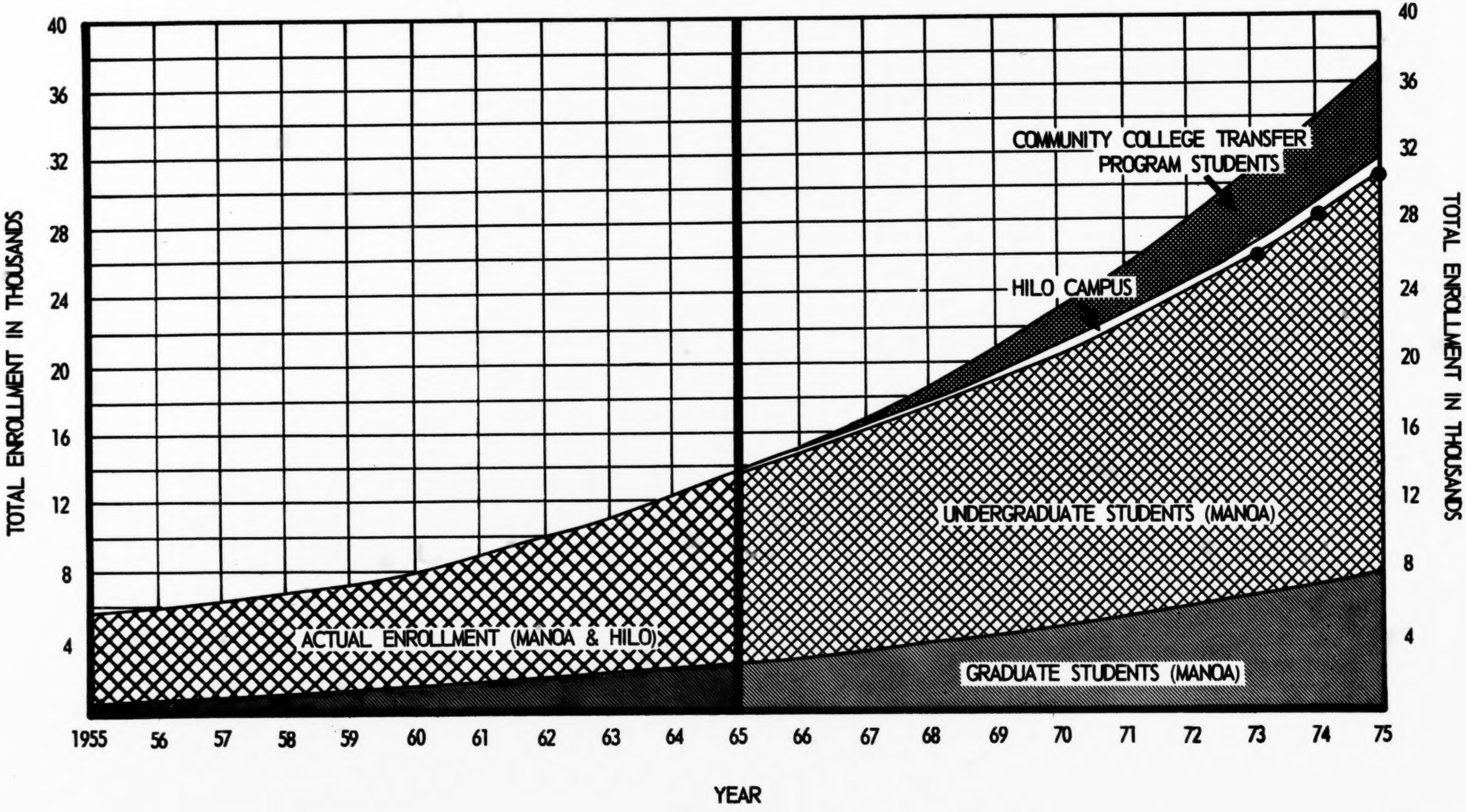
Rationale for Limiting Enrollment

Simply in terms of economics, long-range expansion plans for universities, as for business firms, demand decisions which take into account the factors of cost and efficiency. In an urban area, capital costs mount rapidly as more land must be purchased. Eventually the day comes when it is cheaper to accommodate expansion by moving out of the high cost area. In the case of a university this means creating a new campus elsewhere, and transferring the growth to that location.

Another factor is that of efficiency and comfort of operation on the original site. Large scale movement on a campus is more frequent than in the usual public office or business plant, and personnel transit problems are much more important. Regularity of class hours is tied in with set time allowances for transit between buildings. If students are to walk from one class to another the distance across campus becomes a limiting factor; a 10-12 minute pedestrian radius is probably maximal. If the campus is enlarged beyond this, shuttle bus service probably has to be provided, as at some huge state universities. Assuming the recommendation of the Campus Development Plan is followed, and future buildings do not average more than three stories in height,[3/] pedestrian transit time of no more than 10 to 12 minutes is feasible for 90-95 per cent of "hard core" traffic within a 25,000 student campus.

FIGURE 2

STUDENT ENROLLMENT, ACTUAL & PROJECTED UNIVERSITY OF HAWAII SYSTEM 1955 - 75▲



● EXCESS OVER 25,000 WILL BE
ENROLLED AT ANOTHER CAMPUS.

▲ ALL CREDIT COURSES CALCULATED FOR FALL SEMESTER

Transit time could be drastically reduced by creating several campus cores with separate facilities, as at some other universities where constituent colleges form distinct teaching and living units, but the Academic Development Plan Committee adheres to its original decision that the Manoa Campus be organized about a single core.

The experience of state universities which have exceeded the 25,000 mark indicates decreasing articulation of effort at all levels, from top administrative echelons down to student-faculty relationships. Organizational waste (of which administrative awkwardness is but one example) offsets the supposed "economies" of large scale operation and "low unit cost." Eight state universities have grown past the 30,000 mark, and a few beyond 40,000. A frequently heard report on these educational behemoths is that students, faculty, and administrators therein experience numerous frustrations caused by their sheer size. There is no easy shrinking formula for an overgrown educational institution. All these schools have, however, decided to stop further major expansion on the main site, and have established, or are planning, new, separate campuses.

All who read the news are familiar with the gargantuan University of California complex, and the problems ensuing from its size. Within recent years a decision was made (possibly too late?)to peg population at the two largest campuses, Berkeley and Los Angeles, at 27,500 (full-time equivalent) students and to limit future expansion on other campuses already existent or to be built.

Though some of the considerations mentioned above have been couched in terms of analogies between the university and the firms of private business, in terms of plant costs and efficient operation, the comparisons can go just so far. A state university is not a business. In a democracy it is an institution set up by the public to serve the public; the basic criterion of its accomplishment is not private profit but the public good. It cannot--and should not--close its doors to all but a carefully selected elite, as the small private college can do. Its task is to help further the education of all applicants who can profit from study at the university level. Granted this, and the rapidly increasing nationwide demand for education beyond the high school level, the state university system almost inevitably becomes "big." Granted this also, the question then becomes "How big?" and just as importantly, "What kind of bigness?"

Everyone knows of parents who seek a "good, small" liberal arts college for their children, where it is supposed there is the kind of comparatively close personal contact within the student body, and between students and teachers, which it is assumed is impossible in the large "dehumanized" state university or college. This kind of educational opportunity is not, however, ordinarily open to the children of the average citizen; it tends to be available mainly to those whose families are in the higher income levels. And even these, nowadays, find entrance difficult if not impossible, as such colleges restrict enrollment and constantly upgrade entrance requirements--our own increasing proportion of students from such families reflects a national situation.

What then is the lot of the student who, along with some 25,000 others, is enrolled at a state university? In recent years not only educational journals but popular magazines have had numerous articles describing substantial student-faculty dissatisfaction with the educational climate of such institutions. The list is long, but certain allegations seem almost universal: increasing red tape, from student registration to top administrative offices; automation and depersonalization of procedures; increasing loss of student-faculty contact, in, as well as outside the classroom; student demand for "a voice" in the fundamental organization of instruction and extra-curricular affairs; faculty complaints of lack of communication with administration; lack of faculty influence on major policy decisions, and relegation to the status of "hired-hands"; over-emphasis on research and publication at the expense of good teaching; over-emphasis on graduate at the expense of undergraduate education, combined with a transient, on-the-make faculty, as universities compete with each other to lure eminence to the campus; and new buildings everywhere, but too few devoted to accommodations within which students can conveniently study, hold meetings, and socialize. In short, the university, which was ideally a "community of scholars" (including students as part of that community), is often asserted to have become "an impersonalized aggregation of disengaged individuals."

Each of the complaints listed had frequently been voiced on the Berkeley campus of the University of California before its nationally publicized "student revolt" of 1964, during which student leaders constantly voiced their distaste for the "machine" and their determination not to be reduced to the status of digits on IBM cards. Berkeley was not, however, unique among larger state university campuses in regard to such complaints; it was simply more unfortunate than others in that students took unprecedented action. The repercussions have not only brought about much soul searching and some administrative reorganization on that campus, but have caused similar response on other large campuses throughout the nation.

But this is only one side of the picture. Bigness has its advantages as well as its disadvantages. The large campus has the resources (good libraries and salaries) to attract outstanding scholars and teachers, who in turn attract able graduate and undergraduate students, lifting the intellectual tone of the whole university. It can provide a wider variety of interesting choice in curriculum and extracurricular activity than can the smaller school. (True, this menu has often been a vast smorgasbord, with little articulation and inadequate guides thereto, but this can be remedied, or avoided, and the intelligent student can learn discrimination.) The big school can provide noted visiting artists, musicians, lectures, and conferences; support excellent musical and theater groups. It can offer a wider range of experiment in educational and social combinations than can the small school. If it exists in a large urban setting, it can offer wider cultural, social, and even economic opportunities outside its walls than are offered in the smaller, campus-centered city, whose atmosphere may be inbred and stultifying, tending to isolate students from the increasingly urbanized world in which they will live after graduation. In this aspect our university is more than ordinarily fortunate, in that its setting is not only urban, but cosmopolitan, because of Hawaii's sociological makeup and its location as a Pacific and international crossroads.

How to Nourish Humane Qualities in a Big University

Do the asserted advantages (the list could be expanded) outweigh the asserted disadvantages of large size? Or, more pertinently, are all the disadvantages inevitable as a university expands? When analyzed, most of them fall in the area of human relationships--and quite naturally. Education is at core a human and, hopefully, a humanizing process. It is also, or certainly should be, a process of constant innovation and experiment. Perhaps many of the dissatisfactions with the big university arise from the fact that its faculty and administration have been thinking in the same old ways, and therefore doing the same old things, though on a much larger scale, as the nature of society outside the academic walls changes with unprecedented speed, and student needs and expectations change in like degree? Perhaps some of the planning which they have done is similar to that perennially charged against the military, that it is always for the last war? Perhaps some administrators have carried the analogy to private business too far, emphasizing more efficient machinery and neglecting "personnel relations." Certainly, even on the business analogy, "consumer satisfaction" does not seem to have increased in proportion to "output" in some of the larger production units.

If education is in fact a humanely directed activity, there is no necessity to repeat the mistakes made elsewhere as our university expands. We have an Academic Development Plan, which is in process of continuous scrutiny and revision. Many of the errors made elsewhere seem to have resulted from lack of any overall planning, or a start made too late. To run down the list of dissatisfactions with the big school noted previously, red tape can be minimized; useful automation, as with registration, grade reports, library usage, etc., may be explained and worked out in advance with faculty and students, rather than imposed, unannounced, by administrative fiat. (This approach would also apply, for instance, to the use of closed circuit television for large lecture sections, where it has some definite advantages over traditional methods, and might even prove, in effect, less "impersonal" than the mass lecture system.)

Class enrollments in basic courses may have to be larger, but these could at least be made more interesting if taught by enthusiastic and able faculty. Ways can constantly be sought whereby personal contact can be maintained--even the novice freshman should on occasion be exposed to one of the brilliant scholars whose reputation brought him to enroll--and he should have opportunity for easy communication with course instructors or readers.

Student desire for a real share in the making of basic educational policy should, and can, be encouraged, by providing representation for student leadership in the councils of faculty and administration.

Faculty-administration relationships need not be uneasy if the administrator keeps in mind the fact that power cannot only "corrupt," but can isolate him from those whom it is his function to serve; if the faculty member realizes not only the temptations, but also the burdens and complexities of administrative power; and if both attempt constantly to keep open old, or to provide new and more effective, lines of communication. Joint administrative faculty counsel, such as that which provided the Academic Development Plan and recently produced a new University salary plan, reinforce mutual understanding.

There is no reason why a good graduate school cannot be teamed with a good undergraduate school, without over-emphasis on one at the expense of the other. Good teaching can be fostered if excellence in that field is rewarded on an equal basis with eminence in research. If this were so, and more faculty considered it "worthwhile" to pursue recognition and concrete reward by dedication to teaching and students, the volume of student dissatisfaction on many campuses would probably greatly decrease, for a good teacher is interested in his students, not only as "brains" to be trained, but as fellow human beings.

Student accommodations do not have to be given low priority. A campus, even a large one, can be so planned that students may have study halls, social lounges, and office space for student groups conveniently located and comfortably arranged throughout the campus. Such are the intentions of the campus building program now underway.

This university is, obviously, cognizant of the above considerations. They were given consideration in the formulation of the Academic Development Plan and suggestions there made are being implemented.

The undergraduate Honors Program for students above the average in ability, who, if well-off, might be able to attend a prestigious small college, has been given an enlarged staff, a headquarters, and expanded scope. (Its enrollees tend to be the sort of students who have in the past been dissatisfied with the lack of challenge and dehumanization of the "mass-university.")

A recommendation of the Academic Development Plan that more adequate academic counselling be established within the College of Arts and Sciences was intended to assist students toward maximum utilization of their educational opportunities in the large university. This recommendation has been partially implemented through a 1965 appropriation which provided five of the twelve positions requested. Though the new advisory program has not been in operation long enough for conclusive appraisal of its results, it is already obvious that a fundamental need is beginning to be met. The President has instituted a regular series of "round table" meetings with student leaders, and in the spring of 1965 the University Senate established a standing committee composed of equal numbers of students and faculty, to facilitate discussion of problems of mutual concern. A recently completed report of the Campus Development Plan Committee includes plans for convenient and comfortable student meeting places and study facilities.

In the encouragement of excellence in teaching a step has been made in the institution of a system of special awards for such achievement. Academic departments have been alerted to the need of maintaining and building student contact, even as enrollments increase. The University Senate is advised of impending changes in educational policy, is consulted thereon, and initiates some of these. This present supplement to the Academic Development Plan certainly indicates awareness of the need for change and experiment. It is, however, vividly recognized by its formulators that research, planning, and wise implementation thereof must be a continuous process as the University faces both the perils and the promise of rapidly increasing stature.

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In summary, with close attention to the needs of students and faculty, it seems possible to develop a Manoa Campus capable of educating as many as 25,000 at a time without doing violence to the humane spirit of higher education. In fact, for many students the varied programs, facilities and opportunities of a big campus should be superior to those of the small college.

It is already time to begin planning for another four-year campus, one which will be ready when the Manoa enrollment reaches 25,000. From the onset, this campus should be planned positively, with a purpose and rationale more basic than merely providing for the overflow from Manoa Valley. It should be an early order of business to define that purpose and rationale with consideration to the needs of the University System and the community it serves.

Footnotes

1/ Future high school enrollments, entrance to the Islands of mainland families, the attraction of the new community colleges for students who might have a choice between one of these, Hilo, and the Manoa Campus, cannot be predicted with confidence until more detailed demographic and educational studies have been made.

2/ Desirable because of the flexibility and range of activities offered to students and faculty members whose interests are not readily divisible between "lower division," "upper division," and "graduate." Indeed, as the preparation of students and their intellectual sophistication continues to improve (unevenly), these distinctions become less and less significant. Already, well prepared incoming "freshmen" go to "upper division" courses in mathematics, science, and foreign languages.

3/ This for economic as well as esthetic reasons; rows of costly elevator banks would be necessary for rapid movement at class-break times in high rise building.

COMMUNITY COLLEGES

The Academic Development Plan, prepared in 1963, did not include the community colleges, the creation of which was authorized by the Hawaii State Legislature in the following year. The enabling legislation (Act 39 of the Session Laws of Hawaii 1964) states the purposes of community colleges in broad terms: "to provide two-year college transfer and general education programs, semi-professional, technical, vocational, and continuing education programs, and such other educational programs and services as are appropriate to such institutions."

The Act contains three provisions which are noteworthy: (a) it establishes a state-wide system of community colleges under the University Board of Regents; (b) it authorizes the transfer of the existing technical schools from the Department of Education to the University of Hawaii and their conversion into community colleges; and (c) it excludes the island of Hawaii from the provisions of the Act.

The placement of community colleges under the state university's Board of Regents makes Hawaii's system unique. It makes possible in Hawaii a truly integrated system of public higher education. Such integration is accomplished administratively by making the executive officer of the community colleges a vice-president of the University responsible to the president and through him to the Board of Regents.

Occupational Program

On July 1, 1965, by executive order of the governor, four technical schools--two on Oahu, one on Maui, one on Kauai--with the following programs were transferred to the University of Hawaii. These schools and programs now constitute the beginning of the community college system.

Table 5

Technical School Programs and Enrollment
Fall 1964

Programs	Technical Schools				
	Total	Honolulu	Kapiolani	Kauai	Maui
TOTAL	1,853	692	817	131	223
Aircraft Technology......	65	65	--	--	--
Apparel Trades...........	45	21	--	--	24
Automotive Technology....	183	111	--	24	48
Building Trades..........	122	60	--	24	38
Business Education.......	770	--	627	65	78
Cosmetology..............	67	67	--	--	--
Electricity..............	39	39	--	--	--
Electronics..............	125	125	--	--	--
Engineering Aide.........	16	16	--	--	--
Hotel, Restaurant & Food Trades..........	117	45	72	--	--
Machine Shop.............	54	33	--	7	14
Metal & Welding Trades...	103	71	--	11	21
Health Occupations.......	118	--	118	--	--
Refrigeration & Air Cond.	39	39	--	--	--

To the above will be added such occupational programs as registered nursing (now within the College of Health Sciences with the understanding that it will be shifted to a community college as soon as facilities are built), police science, more options in the secretarial and business administration programs, and expanded programs in the hotel-restaurant fields.

It is expected that several of the occupational programs will be modified in the fall of 1966 so as to qualify students for the degree of Associate in Arts or Associate in Science. The major addition to the curriculum will be courses in the social sciences.

Occupational programs will continue to receive heavy emphasis in the community colleges. Immediately after passage of the Community College Act, the services of Professor Norman C. Harris of the University of Michigan were secured to evaluate the existing technical school programs and to suggest programs for the future.

Professor Harris' comprehensive report, Curriculum Development for Hawaii's Community College with Emphasis on Occupational Education, will serve as a useful guide in the development of occupational programs.

Present Planning

Plans are now underway for the establishment of five community college campuses: three on Oahu, one on Maui, and one on Kauai. Although campus sites for all are not firmly fixed, two will probably be extensions of present technical school sites, the facilities of two schools will probably be relocated, and the fifth will be an entirely new campus. The following briefly describes each:

1. Maui - Maui Technical School, expansion of present site in Kahului.
2. Oahu - Kapiolani Technical School, relocation to larger campus site, preferably somewhere between downtown Honolulu and the Diamond Head area.
3. Oahu - Honolulu Technical School, expansion of present site on Dillingham Boulevard.
4. Oahu - New campus to be located between Waipahu and Pearl City, to serve Leeward Oahu.
5. Kauai - Kauai Technical School, relocation to some other larger site in or near Lihue.

The five community colleges will differ in enrollments and programs. The larger ones on Oahu will be planned for 4,000 to 5,000 full-time day students; the smaller neighbor island campuses may not enroll more than 400 to 600. The library and theatre facilities will be designed to serve the surrounding communities. Community colleges, expecially in areas outside of urban Honolulu, should become educational and cultural centers of their region.

The following are tentative opening dates of these institutions as comprehensive community colleges and their respective enrollment projections.

Campus	Comprehensive Community College in	1975 Enrollment Projection
1. Maui	1967	600
2. Kapiolani (Honolulu)	1968	5,000
3. Honolulu	1968	4,500
4. Leeward Oahu	1968	5,000
5. Kauai	1968	500

College Transfer Programs

All of the community colleges are expected to have college transfer programs, and the conduct of these programs is of special interest to the University.

The college transfer programs of the community colleges are not expected to be carbon copies of the University's programs. Community college programs will be much smaller in scope, probably limited initially to serving the requirements of majors in the Arts and Sciences College. (In this connection, the current University attempt to provide more uniform requirements for all freshmen and sophomores will enable the community colleges to serve the needs of a greater number of undergraduates.)

It is hoped too that the community colleges will experiment with and differ among themselves in the offering of undergraduate courses. "Standards" of collegiate work must be maintained, but this should not be interpreted as duplication by either the staff of the community colleges nor of the University. While standards must be observed, admission to the college transfer programs of the community colleges should be more liberal than at the University. This policy is in keeping with the community college purpose of enlarging educational opportunity; it places a premium on effective teaching and counseling.

Before college transfer programs are instituted in the community colleges, rules for the transfer of students from community colleges to the University should be formulated. These rules should in no way discriminate against a student who begins his path to a baccalaureate through the community college. The community colleges should keep accurate and detailed records of their transfers. Such records will help to keep the transfer regulations realistic, and also help the community colleges in their faculty and curriculum development.

Articulation of Colleges and University

It is also essential to establish a relationship among the several campuses of the University System which will be offering comparable courses, even before the comprehensive community college programs begin. One possible relationship is that of ignoring each other. This cannot work well if comparable academic standards are to be maintained, and if they are not maintained, students transferring from the community colleges to the Manoa Campus will be disadvantaged. Furthermore, a policy of isolation--one difficult to imagine in an area as small as Hawaii--would act as a barrier to mutually advantageous intellectual exchange among our campuses.

Another possible relationship is for the Manoa Campus, or the central administration of the University, to prescribe standards and means of enforcing them--i.e. through the selection of community college faculty, through prescribing course outlines and textbooks, through giving uniform examinations on each campus, etc. This pattern of central control is contrary to the Academic Development Plan and to the spirit in which the community colleges were established. That spirit is to encourage innovation under circumstances quite different from those of the large Manoa Campus.

Instead, collaboration among the several campuses of the University System, collaboration not merely by their administrators but more importantly by their faculty members, seems the best means of assuring high and reasonably uniform academic standards, in the process generating a constant flow of ideas back and forth between the community colleges, Manoa and Hilo. To this end, liaison groups should be formed, representing appropriate community college, Hilo and Manoa faculty, in each major subject area where parallel instruction will be offered: communication, literature, history, mathematics, basic natural and social sciences, etc. It is essential to the success of this statewide educational enterprise that the Manoa departments involved offer counsel and cooperation, but not domination. The liaison group in each subject area should meet frequently, at least at first--and not always in Manoa--to work out educational objectives and standards which all campuses will have in common--although the implementation may well vary from one campus to another.

If a sense of joint enterprise can be established from the outset, the entire University System will benefit, not least the main campus, for it is anticipated that the academic programs of the community colleges, starting from scratch, will develop some approaches to undergraduate instruction superior to those now in use.

Effect on University Enrollment

What effect will the community colleges have on the undergraduate enrollment at the Manoa Campus?

Enrollments in the college transfer programs, especially initially, will depend a great deal on the quality of the programs, faculty, and facilities on the community college campuses. At this writing, even the "image" of the community colleges remains unclear, but studies conducted in 1963 and 1964 provided the following information.

1. Of the 2,003 high school seniors who then indicated that they plan to enroll at the Manoa Campus, 15 per cent or 305 stated that they would attend a community college. (1963 Community College Study)
2. Of those students already enrolled on the Manoa Campus, 13 per cent indicated that they "would have enrolled at the two-year branch on Kauai, Maui, or rural-Oahu if one had been available." (1963 College Students Financial Aid Study)
3. A comprehensive survey involving 10,765 University Manoa Campus students in the fall of 1964 indicated that 1,658 or 15.4 per cent would have enrolled in a community college. Significantly, the percentages

were highest for students from Kauai (42.4), Maui (42.0), and Leeward Oahu (37.0). (University of Hawaii Student Survey, Fall 1964)

In working on enrollment projections, it should be remembered that while there may be a "loss" at the freshman and sophomore levels at the University, there is the possibility if not probability that there may be a "gain" at the junior and senior levels. Experience in other states indicates that where community colleges have large enrollments, the four-year institutions show disproportionately large junior classes.

In the future, as the college transfer programs of the community colleges prove themselves and gain "stature," especially in the eyes of the high school graduates, it is probable that a larger percentage of freshmen and sophomores will be enrolled at the community colleges. But this may also be the time when there is a maximum enrollment at the Manoa Campus, and it may then be desirable to establish a policy indicating who among the freshmen and sophomores will be on the Manoa Campus and on the community college campuses.

There remain other areas in which policies and regulations are yet to be formulated. Among these are:

1. Faculty. Recruitment, salaries, tenure, sabbaticals, teaching loads, etc. Separate regulations will govern the faculty of the community colleges. However, it is expected that these regulations will bear some relationship to University faculty regulations.

   A faculty position in a community college should not be viewed as a "stepping stone" to a position on the Manoa Campus, as each community college campus will be expected to recruit, in the main, faculty members who plan to make community college teaching a career. The graduate divisions of the Manoa Campus may wish to suggest community college teaching as a career to some of their able students. Indeed, the possibility of a university program for the preparation of community college instructors should be explored.

   Community college faculty members are generally expected to have master's degrees or their equivalents; those with special responsibility for curriculum design may have the doctorate. Faculty will be recruited from various sources--the University, high schools, other universities and colleges, both here and on the mainland.

2. Continuing Education. The community colleges expect to conduct classes in the evening and otherwise encourage adult or continuing education. In this respect, some working arrangements with the College of General Studies should be developed. (A general framework is suggested by Professor Cyril Houle in his "Consultant Report: College of General Studies" /June, 1964/ pp. 21-22.)

3. Summer Session. Community colleges should operate year-round, and the summer session approach seems most feasible. Besides offering their own courses in the summer, the possibility of offering upper division courses and workshops, especially in the areas outside of Honolulu, should be investigated.

4. Other Community Services and University Activities. The community college campuses will offer the University an opportunity to be truly a state-wide institution. In the community colleges, University lectures, plays, forums, etc., have accessible platforms from which a large state-wide audience can be served.

5. Specialized Training Facilities. The community colleges will have several types of specialized training facilities and equipment which may effectively serve University programs. For example, University students being trained as secondary teachers of commercial subjects currently find it useful to utilize the larger variety of typewriters, accounting machines, etc., which are to be found on a community college campus; those seeking the baccalaureate or graduate degrees in the hotel-restaurant fields in the College of Business Administration may find some exposure to the practical hotel-restaurant training being conducted at the community colleges a helpful adjunct to their training. The University may benefit from such arrangements in other fields of training.

In summary, the community colleges and the University, though quite distinct in their major educational programs, should recognize and utilize each other's resources wherever feasible in developing a University System to serve the people of our state in myriad ways.

COLLEGE OF HEALTH SCIENCES

Establishment and Organization

After study by various University committees, the Board of Regents approved the establishment of a College of Health Sciences in September, 1965. This action consolidated the administration of several existing and proposed units related to the health sciences. The new college comprises three major units:

1. the School of Medicine (as developed from the plan for the School of Basic Medical Sciences, Academic Development Plan, pp. 47-49);
2. the School of Public Health (developed from the previously existing Department of Public Health, Academic Development Plan, pp. 83-84); and
3. the School of Nursing (the previously existing College of Nursing renamed, Academic Development Plan, pp. 40-42).

There are many advantages in consolidating the three schools into the College of Health Sciences. There is opportunity for coordinated program planning and review aimed at achieving the common goal of providing the best possible education, research and service in the various health fields. The educational programs will benefit from having a faculty of diverse specialties; for example, an expert in epidemiology attached to the School of Public Health will offer courses in infectious diseases contributing to the curricula of the other two schools. This makes for both efficiency and proficiency in teaching. Research programs may be formulated in areas of greatest needs, and they may be tackled by teams of experts, each participant contributing within his area of specialization. Service to the community will also be enhanced by the services of a greater variety of specialists. Coordination in planning will provide for greater efficiency in space and facility utilization. At the same time, maintaining the identities of the three schools within the consolidated College permits each school to conform with accreditation requirements.

The College is administered by an Executive Committee composed of the deans of the three schools and chaired by the Dean of the School of Medicine. The three schools are administratively responsible, through the Executive Committee, to the Vice President for Academic Affairs of the University. The closely associated Pacific Biomedical Research Center (Academic Development Plan, pp. 63-64) remains administratively responsible to the Director of Research of the University in budgetary matters but it works cooperatively with the three schools and with other units of the University in planning and conducting research in the health sciences.

Role of the College

The role of the new College of Health Sciences is to provide educational programs, to foster research, and to provide public service in the various health fields to the people of Hawaii and also to the peoples of the Pacific and Asia, especially in those less-developed communities where at present even the rudiments of health science and technology are virtually unknown. The College has manifest strength in the international aspects of the health sciences, and in each of its fields of activity it seeks to extend from the local to the international scene.

Facilities

The construction of a major facility for medical education, public health education, and research in all health sciences is now assured by provision of funds from the State of Hawaii, the U.S. Public Health Service, and three private agencies: the Commonwealth Foundation, the Kellogg Foundation, and the China Medical Board. The source distribution of available capital funds is as follows:

State of Hawaii	$1,000,000
U.S.P.H.S.	4,000,000
Private Foundations	1,250,000
	$6,250,000

The total is within $600,000 of that required, and an architect is already at work. It is expected that the new building will be ready in the fall of 1968.

SCHOOL OF MEDICINE

Role

During 1964 and 1965 there was steady progress in completing plans for the "School of Basic Medical Sciences" culminating in the establishment of the School of Medicine. The School will incorporate the first two years of graduate medical training in an undergraduate-graduate program leading to the Master of Science (M.S.) degree. This will prepare students to complete the Doctor of Medicine (M.D.) degree at other medical schools where they will take two years of additional instruction in the clinical disciplines. Thus the University is not contemplating a four-year program of graduate instruction leading to the M.D. degree. However, a strong two-year program will provide the base for such a development should it be warranted in the future. In addition to the medical program, the School will also offer programs of study leading to both the M.S. and Doctor of Philosophy (Ph.D.) degrees in basic medical science disciplines such as Biochemistry, Genetics, Physiology and Pharmacology.

In addition to the important role of providing instruction at various levels, including some undergraduate and graduate courses to fill the needs of other schools and colleges of the University, the School of Medicine also has the responsibility of fostering research and rendering all possible service in the medical field at the local, Pacific, and international levels.

Organization

The administrative structure of the School of Medicine reflects its primary responsibilities in instruction, research and service. The School is under the direction of the Dean, assisted by an Associate Dean for Student Affairs, an Associate Dean for Professional Affairs, and an Associate Dean for International Affairs. The Dean is advised by the faculty of the School of Medicine as a whole and specifically by an Executive Committee composed of the heads of the various departments and divisions. The Associate Dean for Student Affairs will work with committees appointed by the Dean in all matters concerning the admission of students, students' standing and promotion, academic counseling, and other comparable activities. The Associate Dean for Professional Affairs will be the Dean's liaison with the medical communities of Hawaii and elsewhere. He will work with committees appointed by the Dean from the full-time faculty of the School of Medicine and the part-time clinical faculty who will participate in teaching. The Associate Dean for International Affairs will advise and represent the Dean in the School's medical activities in other countries. An important development in this direction has been the activation of a contract between the University and the U.S. Civil Administration of the Ryukus for the direction of post-graduate medical education in Okinawa.

The School is organized into several departments. Three of these already existed in the Graduate Division and were transferred to the School of Medicine upon its inception. These are the Departments of Biochemistry and Biophysics, Genetics, and Physiology and Pharmacology. Two new departments, Anatomy and Allied Medical Sciences, have been formed. The teaching functions of the Department of Anatomy are obvious but it will also include the development of a major program of research in developmental biology. The Department of Allied Medical Sciences comprises two sections: Medical Technology (formerly a department in the College of Nursing) and Speech Pathology and Audiology (formerly a unit in the Department of Speech of the College of Arts and Sciences). Two additional departments, Medicine and Pathology, will be organized in the near future to round out the medical program. The Department of Microbiology is an affiliate department; that is, it remains part of the College of Arts and Sciences, but the majority of its faculty have joint appointments in the School of Medicine and will undertake the training of medical students in microbiology. Similarly, the faculty of various sections in the School of Public Health, will teach courses in epidemiology, infectious diseases, biostatistics, etc., for medical students.

The departments will range in size from 5 to about 10 persons (not all paid from State funds). Each faculty member is encouraged to share in the responsibilities of teaching, research and service, including assistance in administration. The percentage of time devoted to these responsibilities will vary from person to person, but to strengthen the effectiveness of each department and to increase the cooperative spirit within it, each person is encouraged to participate in all three.

Academic Program

The curriculum plan for medical students remains essentially the same as that outlined in the Academic Development Plan (pp. 47-49). Of the six-year program, the student will spend the first three years under the auspices of the College of Arts and Sciences in premedical work and liberal arts. He will then transfer to the School of Medicine and spend the last three years in professionally oriented studies but including a continuation of his previous program leading to a B.S. or B.A. degree in the area of his choice. In his sixth year he should qualify for an additional degree, the M.S. in Basic Medical Science. The medical work covered during this three year period is essentially the same as that ordinarily covered in the first two years of a conventional medical school, but at the University of Hawaii this will be concurrent with continuing undergraduate education.1/ This arrangement differs from that originally outlined in the Academic Development Plan in that the medical courses will not start until the fourth (rather than the third) year of the six-year program; it facilitates the acceptance of students who have taken their premedical training at other universities. With a M.S. degree in Basic Medical Science, the student may then apply for admission to a mainland medical school to complete the remaining two years of clinical study leading to the M.D., or he may apply for continuation of his education, here or elsewhere, in a program of study and research leading to the Ph.D. degree in a biomedical department.

Research oriented students who have not taken the premedical program but who have earned a B.A. or B.S. degree in appropriate science curricula may qualify for admission to the Graduate Division of the University to proceed to the M.S. or Ph.D. degrees in one of the several medically oriented disciplines.

Special notice should be directed to the curricula in the two sections of the Department of Allied Medical Sciences. The first leads to a B.S. degree in Medical Technology, and the second to competency at various levels in Speech Pathology and Audiology. The possibility of instruction in rehabilitation and in occupational therapy is under consideration.

Timetable

To accelerate the initiation of the medical program, temporary space is being obtained, both on campus and off, to provide for the new departments and to allow acceptance of the first class of 24 students in the fall of 1967. A new building should be completed in the fall of 1968. At that time, the classes in the medical program will be composed of 48 entering students each year.

The School of Medicine has already received provisional accreditation from the Liaison Committee of the American Medical Association and the Association of American Medical Colleges. (Accreditation is always provisional until the first class has graduated.)

SCHOOL OF PUBLIC HEALTH

Organization and Role

Since the publication of the *Academic Development Plan*, the School of Public Health has made significant progress. The graduate Department of Public Health was formally established as a School of Public Health in September, 1965, and placed within the College of Health Sciences. The new School has a major role to play in the many aspects of public health education, research and service for the people of Hawaii, the nation, and the less-developed communities of the Pacific area and Asia.

Schools of public health are concerned with maintaining and improving the general health of a community. Consequently, the essential purpose of these schools is to prepare individuals for, or assist them in their continuing education in, any one of an extraordinarily wide variety of careers in the health field. Examples are sanitary engineers, sanitarians and health educators; nurses, nutritionists, social workers, and psychologists who work in health agencies; biostatisticians, and epidemiologists; microbiologists and radiation technologists; health services administrators and international health officers. The kinds of problems which concern these health workers similarly reflect a wide assortment of interests; these include community mental health, accident prevention, communicable diseases, rodent and insect control, water and air pollution, school health, maternal and child health, problems of the aged, rehabilitation of disabled or handicapped persons, population control, hospital administration, and so forth.

The establishment of a school of public health at the University of Hawaii enables Hawaii to join mainland schools in alleviating a real shortage of qualified health personnel throughout the country. The 1963 report of the Second National Conference on Public Health Training boldly states that, within the United States alone, "public health is faced with the necessity of preparing approximately 17,000 additional personnel by 1970 for the staffs of state and local health departments, merely to keep pace with projected population growth and an attrition rate of 4 per cent per annum."[1] The need for qualified health personnel at both the technical and professional levels in Pacific and Asian communities is probably greater and even more urgent.

Objectives and Functions

The objectives of the School are not only to prepare persons who will direct or perform the manifold public health services required in local, state, national and international health agencies, but also to prepare individuals who will conduct research and contribute to the enlarging base of knowledge in the basic sciences pertinent to public health.

Guided by these objectives, the principal functions of the School are:

1. to provide graduate instruction in the public health sciences for students in the University;
2. to encourage, develop, and conduct health research in Hawaii and the Asian-Pacific communities; and
3. to assist in the rendering or improvement of community health services in the State and Pacific-Asian areas.

The development of programs to assist in the training of Asian and Pacific public health workers (largely funded by federal, private, or international resources) is in accordance with the established University policy to encourage programs which build upon Hawaii's special characteristics relating to its geographical location, physical environment and multi-cultural population.

Academic Programs

The School of Public Health was accredited by the American Public Health Association in October, 1965, making it one of 13 accredited schools in the United States. Accreditation enables the School to offer a graduate program leading to the Master of Public Health (M.P.H.) degree. This program is designed to impart to the student an understanding of the broad field of public health, and at the same time to meet each student's special interests and occupational objective by offering him several areas of emphasis from which he may select one. These areas of emphasis presently include biostatistics, environmental sanitation, epidemiology, international health, maternal and child health, population dynamics, public health administration, public health education, public health laboratory, and public health nutrition.

The history of other schools of public health shows that traditionally M.P.H. candidates have been largely physicians, dentists, veterinarians and other personnel in the health or related professions with a number of years of experience--in short, experienced persons who already have professional degrees. For these individuals, the program may be completed in one year. However, additionally, in keeping with the present trend in schools of public health, the University of Hawaii's School of Public Health also accepts in its M.P.H. Program students with bachelors' degrees or graduate degrees in a health-related science, even without professional experience. For these students, the program usually requires about two years.

The School also offers a graduate program leading to a Master of Science (M.S.) degree to persons desiring intensive research training in some specific aspect of public health.

The School intends to develop doctoral (Ph.D.) programs in epidemiology and biostatistics. Doctoral degrees in other aspects of public health may be considered in the future.

Traineeships and Scholarships

Accreditation of the School assures substantial annual federal grants to the School for awarding traineeships to qualified American students. These awards cover tuition and fees, stipend, and transportation allowance, and should attract many resident and non-resident students who may otherwise not be able to undertake further education.

Accreditation of the School has also generated greater interest among East-West Center officials who hope to accommodate more Asian and Pacific grantees desiring to enroll in the School's degree program. For the American grantees, field training experiences can be arranged in Pacific and Asian settings; for foreign students, field training experiences can be arranged for Hawaii or the mainland U.S.

Students

By 1970, the School anticipates an annual output of 50 graduates with advanced degrees in public health. It is estimated that two-thirds of this number will pursue the professional degree of Master of Public Health and the remainder the Master of Science degree. Of the candidates seeking the M.P.H. degree, perhaps one-third will be foreign students, the majority of whom will be East-West Center grantees.

The School will also provide service courses in various aspects of community health and medicine to students of both the School of Medicine and the School of Nursing. Because of the broad nature of public health it is anticipated that course offerings will also be utilized by students from other colleges of the University in disciplines such as social welfare, sociology, psychology, engineering, education, etc.

Faculty

Because of the broad nature of public health and the diversity of skills required in its teaching, the faculty of the School necessarily represents an unusually large variety of training and interests. In addition, the School must and does utilize experienced and knowledgeable health personnel from the community to supplement the instruction offered by its regular faculty.

Nearly all faculty members are engaged in research activities, often supervising full-time research staffs financed by federal or private funds. The faculty is encouraged to share instructional and research ventures with other schools, departments, or institutes of the University. For example, current multi-disciplinary activities include joint research on water and waste water with the Water Resources Research Center; coordination of mental retardation courses with the Department of Educational Psychology, College of Education; collaboration in studies of population genetics with the Department of Genetics, School of Medicine; sanitary engineering studies in cooperation with the College of Engineering; essential management of the special research resource computer of the Pacific Biomedical Research Center. The School of Public Health will continue to co-sponsor international public health conferences and continuing education programs with the East-West Center, such as the International Cholera Symposium, the Conference on Education and Training in Asian Countries, and a program for health and medical workers from island territories of the Pacific and Okinawa.

Organization

At its present stage of development, the School consists of one department which has been organized into six sections for administrative purposes. Formal establishment of separate departments will likely become necessary in the future as student enrollment and faculty increase, and doctoral programs are offered; associate deanships may be established as the School grows in size and complexity.

The present six sections represent groupings of related subject areas:

1. Epidemiology-biostatistics. These two areas of public health naturally complement each other in research; the section also engages in studies in public health genetics, infectious diseases and international health.

2. Health Services Administration. This section includes hospital, medical care, and public health administration, and teaching and research programs relating to gerontology, medical aspects of disability, and continuing education.

3. Environmental Health. This section encompasses environmental sanitation, public health engineering, radiation health, and public health laboratory services.

4. Community Health Services. This section covers diverse fields of public health such as maternal and child health, mental health, dental health, school health and public health nutrition. It is possible that this section may be divided further as the School develops.

5. Public Health Education. In the brief experience of the School, it has already become apparent that this aspect of public health will attract large numbers of degree candidates, particularly foreign students sponsored by the East-West Center and the World Health Organization. The Pacific and Asian countries are in great need of health educators who can arouse and instill incentive among the people and communities toward improved public health practices.

6. Demography and Population Studies. The School envisions this section as comprising an important part of its program since there is growing interest in the subject of population numbers and control. There is increasingly active support for training and research in this area by federal and private agencies, which will enable the School to enrich its developing program in population studies.

Fiscal Support

The School derives its major operating support from annual State appropriations and federal funds. An important and substantial benefit resulting from accreditation is the School's eligibility for federal training grant funds under section 314 (c) (2) of the Public Health Service Act, more popularly referred to as "formula grants." Several millions of dollars appropriated annually under this section are divided among accredited schools of public health according to an established formula. In addition, a number of other federal and private agencies make funds available to the School for public health research and training programs intended to enhance not only the health sciences and professions in Hawaii and the mainland U.S. but also of the Asian and Pacific communities. The pattern of support from outside sources is expected to continue.

Facilities

At present, the offices and laboratories of the School are scattered throughout the campus with the core of facilities located in Spalding Hall. Other work areas are located in the Pacific Biomedical Research Center, Keller Hall, and two barrack buildings along Maile Way.

By 1968-69, the School will have moved into permanent quarters in the new Classroom Building IV and the Health Sciences Building, thus acquiring a total of about 33,000 net square feet of space. This space includes facilities shared with the School of Medicine, such as lecture halls, audio-visual shops, and animal facilities.

SCHOOL OF NURSING

Reorganization and Role

In September, 1965, the former College of Nursing (*Academic Development Plan*, pp. 40-42) became the School of Nursing in the newly formed College of Health Sciences. At the same time there was a reorganization of its departments. Because of its close association with clinical medicine, the four-year program in Medical Technology was transferred to the Department of Allied Medical Sciences in the School of Medicine. The Department of Dental Hygiene was retained to continue the two-year program in that discipline. A Department of Technical Nursing was created with responsibility for a new two-year undergraduate program leading to the Associate of Science degree in nursing. A Department of Professional Nursing assumed responsibility for the four-year undergraduate program leading to the Bachelor's degree in nursing, a new graduate program leading to the Master's degree, and also new programs in continuing education and research.

Thus the School of Nursing has the role of providing education and clinical training to students in dental hygiene, technical nursing, and professional nursing, of fostering continuing education by registered nurses, and of conducting research in the clinical aspects of nursing. In keeping with the broad goals of the College of Health Sciences, it hopes to assume greater responsibility for the training of students from the Pacific and Asian areas as local needs are met and as additional staff and facilities become available.

The various programs of the School of Nursing and plans for their development to meet anticipated shortages in the future were discussed in detail in 1963 (Academic Development Plan, pp. 40-42). Only recent developments will be reviewed at this time.

Dental Hygiene

The present two-year program in dental hygiene is directed toward qualifying dental hygienists for positions with dentists and the State Department of Health, and for admission to the National Board Dental Hygiene examinations and to state certification and licensing examinations. Enrollment has increased from 25 students in 1963 to 36 students in 1965 and is expected to double over the next decade. Consideration will be given to transfer this two-year program to a community college when a suitable one has been established.

In September, 1965, the program in Dental Hygiene was enhanced by relocation of the department from the old Dispensary Building to new quarters in Webster Hall. Facilities now include a 13-chair clinic with two x-ray rooms, a darkroom, a laboratory room and a classroom.

Technical Nursing

Plans for a two-year, Associate of Science (A.S.) degree program in nursing were presented in 1963 (Academic Development Plan, pp. 41-42). The program is now underway. Its graduates will qualify to write the state examination for licensure as registered nurses, thus helping to alleviate a critical shortage.

The program has been accelerated by deleting an initial planning year and accepting enrollment in September, 1964. The first class of 11 students will graduate in the summer of 1966; a second class of 39 students, enrolled in September, 1965, will graduate in 1967. Recruitment efforts resulted in many more applications than could be accepted with existing physical facilities and faculty.

The program will be transferred to a community college when a suitable one has been established. In the meantime, considering the nursing needs of Hawaii alone the program should be expanded to an enrollment of at least 200 students. When the program has been transferred to a community college, close liaison should be maintained between the staff of the community college and that of the School of Nursing. In technical programs such as Nursing and Dental Hygiene it is very important to have highly trained personnel who will continuously adjust course offerings and content to keep abreast of current knowledge and techniques.

Professional Nursing

The Bachelor of Science (B.S.) degree program provides a four-year curriculum to prepare nurses to serve in public health and all other fields of nursing. These nurses can undertake beginning administrative positions, such as head nursing, and can qualify for advanced education for supervisory, teaching and administrative positions in nursing. Freshman enrollment in this program, 57 in 1963 and 97 in 1965, continues to increase and points to an output of at least 60 graduates per year. This total will fall far short of even local requirements, but the output is limited by presently available hospital facilities needed for student practice learning. The need for additional staff and operating funds to achieve this output has been pointed out (Academic Development Plan, p. 42).

Plans for a Master of Science (M.S.) degree program in Psychiatric-Mental Health Nursing, supported by a grant from the National Institute of Mental Health, were also discussed in 1963 (Academic Development Plan, p. 42). The program was initiated in that year with an enrollment of four students; eight have been accepted for the fall of 1966. Plans call for an expansion of offerings at the Master's level with an output of at least 16 students yearly by 1970. These students will be prepared for supervision, teaching, and administration in one of several special fields, including medical-surgical, public health and maternal nursing, as well as psychiatric nursing.

In the field of continuing education, a program of six short-term courses conducted over a two-year period was begun in September, 1962, for registered nurses in leadership positions. To date, 40 nurses have completed this program and 45 are currently enrolled in the second series. This program in financed by federal funds; participation is limited to nurses in administration, teaching and supervision. Plans call for the development of short-term courses with the College of General Studies for general duty or staff nurses who also need to update their skills.

A research program has been initiated through a grant of federal funds. Clinical studies in nursing are being conducted by Honors students under the direction of the nursing faculty. Additional plans await the arrival next semester of the new dean of the School of Nursing.

Footnotes

1/ A school offering only the first two years of medical training is conveniently referred to as a "two-year medical school," and this term is also applied to the University of Hawaii School of Medicine even though the professional program actually extends over a three year period.

2/ Public Health Service, Second National Conference on Public Health Training, August 19-22, 1963, Report to the Surgeon General (Washington, D.C., 1963), p. 9.

SCHOOL OF SOCIAL WORK

Role

The School of Social Work is one of some 60 units of higher learning in the United States accredited to offer a program leading to a Master of Social Work (M.S.W.) degree. As the only social work school in the central Pacific, it has a wide responsibility for research as well as professional training.

The School's graduate program provides formal instruction in casework and groupwork, both in field and class, plus limited formal training and experience in the techniques of social research. Since the establishment of the School, program emphasis has been on the treatment of individuals and families with problems, rather than on the prevention of problems. The M.S.W. curriculum seeks to provide a body of knowledge and techniques that are applicable in the many different settings in which the social worker may work in coping with specific individual or family problems.

In keeping with this comprehensive concept of a "social worker," and with the recommendations of the Council on Social Work Education (the national accrediting organization), the School of Social Work does not orient its program toward the special needs of any particular agency. Graduates of the School are employed by public welfare, medical, correctional, psychiatric, and family agencies, but it has been left up to these agencies to provide for the special training requisite to effective social work practice in diverse work settings.

In this statement of a development plan for the School, three factors have been given major consideration: the critical shortage of trained social work personnel; the changing character of modern society and the attendant responses of social agencies and social service training programs; and current developments in the theories of social work practice. All three factors point to the need for fundamental changes in the programs of the School; these are specified below.

Critical Factors For Planning

Manpower Problems

Presently and for the foreseeable future the United States faces a critical shortage of trained social service personnel. In 1960 approximately 80 per cent of the persons occupying some 116,000 social work positions across the nation were without graduate training in social work. Graduate schools of social work are currently able to produce only enough M.S.W.'s each year to replace from one-fourth to one-fifth of the 10,000 to 15,000 practitioners who leave the field each year because of marriage, motherhood, retirement, or other reasons. Even if there were no expansion in social service operations, the present rate of training MSW's would not increase the proportion of trained workers in the field. In fact, considering mounting demands for social services, it has been estimated conservatively that the United States will require 50 per cent more social work positions during the next decade.

The same situation exists in Hawaii. An agency-by-agency survey conducted by the Hawaii State Commission on Children and Youth last summer found that there were at least 74 vacancies for social workers and estimated that there would be an additional 200 new positions (not counting replacements) for social workers in Hawaii by 1970. In 1964-65 the School of Social Work had 60 full-time graduate students (approximately 0.75 per cent of the national total, although Hawaii has only 0.4 per cent of the nation's population). However, of the 21 students who received their MSW from the University of Hawaii in the summer of 1965 only about half were available for jobs in Hawaii.

In short, efforts in Hawaii and in the nation generally to raise the level of professional social worker services through an increase in the percentage of such practitioners who have graduate training have been seriously retarded by a shortage of appropriately trained persons. A majority of the new workers hired by public social work agencies this year are University graduates with a B.A. in a social science but with no training, at either graduate or undergraduate levels, in social work areas. Herein lies a problem--both for resident instruction and continuing education--which will be discussed below.

Changing Welfare Approaches to Social Problems

The history of social work in the United States is a story of diverse responses to widespread conditions considered as undesirable but subject to cure or improvement within the family unit, such as poverty caused by the incapacity of the breadwinner. Welfare approaches to social problems were based around three divisions or clusters of techniques. The major one was "social casework," and the lesser two were "groupwork" and "community organization." Each had its own historical roots and its own definitions of the problems.

Casework was heavily influenced by the psychoanalytic model of the psychiatrist-patient relationship, with a substantial infusion of "dynamic psychiatry" in terms of which the family was viewed as the most appropriate action unit for social work. Groupwork, on the other hand, was derived from the traditional settlement house operation, and originally its emphasis was upon the activity group in a neighborhood setting. However, it has increasingly taken forms, such as "group therapy" or "group counseling," in which the approaches of psychiatry are also applied. Community organization was until recently directed at bringing about coordination and integration of diverse welfare approaches; it now has more in the way of welfare planning and development as its focus.

In the late 1950's and early 1960's there occurred substantial changes in the definitions of the basic problems of social welfare and in the responses of the community and the social work agencies. It became a matter of increasing concern that those persons most in need of assistance were seldom drawn into social work relationships in which they could help themselves. (Agency programs, frequently hemmed in by legal restrictions as well as by a shortage of trained workers, were often prevented from working effectively with those clients most in need of help.) Initial responses, among others, were to develop "detached worker" programs in the youth area, and to try to identify "problem people" at a much earlier age so that they could be given special treatment. Concurrently, "community mental health programs" were established by decentralizing mental hospitals or replacing them with neighborhood or community clinics. Psychiatric social workers played important roles in the therapy of these clinics.

More recently, definitions of social problems increasingly have been formulated in terms of the sources of deviancy within urban society, such as the too-readily lampooned idea of cultural deprivation. The new focus of the attack has shifted to comprehensive community-based welfare programs, as in the federal Job Corps or Operation Headstart for young children entering school for the first time. These programs shift the focus from "community organization" to "community development," stimulating major reorganizations of agency services and basic changes in relations among social agencies and between them and the schools. Community development work gives much greater recognition to the importance of the social characteristics of the neighborhood as a determinant of family and individual problems. The goal of community development work is quite literally to change the basic character of the relations of persons in "problem areas" to each other, and to the rest of the community.

Along with these innovations has come a heightened awareness of the potential importance of the frequent face-to-face contacts of social workers with those receiving social services. Social workers in psychiatric clinics, correctional facilities, public housing projects, schools, and other such facilities have increasingly become teachers and consultants rather than direct therapists, leaving primary contacts frequently in the hands of persons whose training has been inadequate. Moreover, the consultant social workers often themselves have had no special training or experience to prepare them as teachers for the particular settings in which the most active contact-workers operate.

And now more than ever before, the objectives and programs of schools of social work are undergoing critical re-examination. Responses across the nation will undoubtedly vary, and many schools will seek to include in their curricula both traditional case- and groupwork methods and newer approaches based on community development. Since the School at the University of Hawaii is the only one in the state, it is probably wiser to be eclectic than to choose between the two general approaches. The School must continue to train workers in the social work skills currently most highly developed. At the same time it must devote greatly increased resources and energies to pioneering and evaluating new approaches. Then it must provide leadership to implement desirable innovations within the areas of social and community welfare. There is more risk, of course, in innovating than in merely continuing along existing courses, but this seems to be a time which demands innovation, and the risk of failure should not be a deterrent to making thoughtfully considered changes in program.

Developments in Social Work Practice and Research

Innovation is dictated by recent developments in social work practice, theory and research seeking to interrelate casework, groupwork, and community work. Writers now question the extent to which the behavioral theory undergirding casework practice can continue to be viewed as sufficiently broad and fundamental. Empirical work, seeking to evaluate the results achieved by social work intervention, has greatly increased, as has interest in genuinely experimental programs.[1]

A quickening of theoretical and research interests has been accompanied by an increase in interdisciplinary programs and faculties at major American schools of social work, e.g., Columbia, Chicago, Michigan, Western Reserve, and by a renewed interest among social scientists for collaborative teaching and research with social workers. Such developments should be considered on this campus, by the several social sciences departments and the Social Science Research Institute, as well as the School of Social Work itself.

Plans for Program Development

To meet increased demands on and opportunities for the School of Social Work, a series of program changes are set forth here, some of them already being planned by the School. These proposals would broaden and strengthen the graduate curriculum and establish an undergraduate major in the field; develop the School's program of continuing education; expand research by the faculty of the School and their collaborators in the social sciences; and provide the additional staff and facilities necessary to support such program development.

Curriculum Development: Graduate and Undergraduate Instruction

The basic curriculum for the Master of Social Work (M.S.W.) degree of all accredited schools of social work is that recommended by the national Council on Social Work Education. It covers three main areas--social welfare policy and services; human behavior and social environment; and methods of social work practice (which include casework, groupwork, community organization, administration and research)--and requires supervised field training to be closely integrated with classroom instruction. To help meet the critical need for additional trained social workers, in Hawaii and throughout the nation, this program of the School should have additional, well-trained faculty. The School is planning to add to its staff for this purpose an average of two persons per year for the next five years.

However, it seems patently clear that any likely increase in the teaching faculty of the School cannot in itself supply the number of social workers needed. It is time to reconsider the policy--so frequently honored in the breach--of regarding the M.S.W. program as the minimal appropriate education for all social work practitioners. Such reconsideration is taking place within the field of social work. Increasingly it is recognized that a variety of technical and trainee-class positions, which do not require graduate study, must be developed and staffed in order to meet pressing manpower shortages.[2]

The policy here proposed for the School (and further discussed below) is to offer a baccalaureate curriculum for persons in training for such entry-level appointments in social welfare agencies. A program of continuing education would enable persons in these positions to gain additional professional skills while on the job. The master's program would then be offered to persons intending to undertake more complex treatment functions, or to fill supervisory, administrative or research positions in social work. Thus oriented, the M.S.W. program should make at least two changes in curriculum: the expansion of instruction in research methodology; additional emphasis on community organization and development. In the graduate program both professionally inexperienced graduate students and those with job experience who are continuing their professional education could learn to apply research techniques to the evaluation of social work programs.

Additionally, special seminars, initially conducted as part of a program in continuing education (see below), should be utilized to acquaint professional workers with recent advances in theory and relate them to practice. For example, current efforts to integrate casework and groupwork can be examined in terms of theory, setting, procedures and results, and comparable experiments can be instituted in Hawaii. The results can then be used to modify the training given in the basic curriculum, wherever such innovations are deemed desirable.

Curriculum Development: Field Instruction

For several years the enrollment of the School had been limited by the number of field work placements available in the social agencies in Honolulu. However, to help meet the shortage of social workers, the federal government recently established programs to increase field placement resources in such fields as mental health, child welfare, vocational rehabilitation and corrections; in 1964-65 the School was thus able to increase its enrollment by adding field supervisors to the faculty. Additional field supervisors in agencies should be obtained by this and every other feasible means. As the program of continuing education is more fully developed it will be possible for the School to provide an effective training program on a continuous basis for prospective field instructors.

The School is also considering the expansion of field placements by means of "bloc" arrangements, i.e., arrangements for setting aside a bloc of time sufficiently large to provide students with an opportunity to observe the application (or non-application) of theory to practice in a social agency setting. It may be a given number of weeks, a semester, or a summer session. This arrangement may significantly increase the number of students who can be trained for an MSW in a year.

A more ambitious program, one which would require considerable effort, would be to extend field placements to more rural settings on the neighbor islands. This expansion of social agency experience could appreciably strengthen the training program for Asian students, who will be attending the School in increasing numbers.

Community Development

The School now gives three courses, one only irregularly, in the area of community organization, an inherently interdisciplinary area which is still seeking a clear focus and an academic identity. Given the probable demand for training in this area by workers in established social agencies and the programs of the Hawaii Office of Economic Opportunity, grantees of the East-West Center, and the trainees of the Peace Corps, it would seem to be appropriate for the School of Social Work to enlarge its program in this area and participate in the organization within the University of an interdisciplinary program in community development.

Toward this end the School of Social Work should appoint an additional specialist in community development to help shape the program, which would appropriately lead to a master's degree. Other units of the University, such as the School of Public Health, the Cooperative Extension Service, the Departments of Sociology, Economics and Political Science, and the architecture program within the Art Department, should participate in working up the new curriculum.

The courses developed in this sequence, and especially the interdisciplinary seminars for faculty and graduate students, would provide stimulation and encourage experimentation within the School's core offerings, provide additional offerings for the proposed program in continuing education, and very possibly generate a University program of potential international significance. Social workers from Asia will be attracted to this and other curricula in increasing numbers.

Undergraduate Program

At present the School of Social Work provides only two undergraduate courses recommended by the Council on Social Work Education. Taught by members of the graduate faculty, they have been utilized primarily to introduce undergraduates to the philosophy of social work and to the various field settings and programs in which social workers are employed.

Shaping appropriate undergraduate programs seems to be one of the important tasks now before the social work profession. It seems at once desirable for recruiting graduate students and imperative for providing more adequately trained B.A. graduates to agencies with serious shortages of workers that the undergraduate program at the University be substantially enlarged.

While an undergraduate major cannot be viewed as a substitute for graduate professional education, it must have sufficient substance to enable students on graduation to begin service in social work functions not requiring substantial professional skills. The major should add to the liberal education of the participating students. Given the breadth and scope of the social services, this is basic. It is also imperative that the undergraduate program not be limited to any specific treatment dogmas; it should draw on experience gained with new methods, as research supports or refutes these methods, as well as established approaches to social work.

Toward this end the School of Social Work is seeking to establish an interdisciplinary undergraduate major or program in Social Welfare within the College of Arts and Sciences. A person with a background in both the social sciences and in social work should be added to the faculty of the School of Social Work to develop and coordinate the program or major. While its exact content cannot be stated in advance, it is clear that the curriculum should not be merely a smattering of courses in various social science departments plus a few "orientation" courses in social welfare. Following the precedent of the interdisciplinary social science course of the College of Arts and Sciences (Man in Society), the program would draw faculty from the School of Social Work and from the various social science departments of the College (including Psychology) who would jointly design special courses for the program.

The undergraduate instruction in social work will of course be open to students following other majors who are interested in this application of the social sciences, perhaps exploring the possibilities of a career in the field. It may be possible for such students to work out a double major, say in Social Welfare and Anthropology, or Sociology, or Psychology, or Political Science.

Continuing Education

To fulfill the needs of this state, the School of Social Work must substantially expand its endeavors in continuing education, which to date has consisted of occasional summer courses, institutes, or workshops for practicing agency workers, usually financed by local or federal agencies and taught by visiting professors, and an occasional advanced course in such areas as administration and supervision. Inasmuch as the State of Hawaii has a liberal policy for in-service training of its personnel through continuing education, the School of Social Work should be able to obtain the financial resources necessary for assuming greater responsibility in this field, as, for example, in the expected extension of a "merit pay system" from public education to social welfare.

In cooperation with the State Department of Personnel Services and the Honolulu Council of Social Agencies, the School should establish an academic program of summer institutes and advanced seminars during the regular year. Some of these seminars might be offered jointly by a member of the faculty of the School of Social Work and one or more social scientists; they should be designed to keep practicing workers abreast of new developments in special fields as well as in social work generally. They would also provide a systematic program for advanced training in administration, supervision, and research-planning.

These offerings would also provide the basis for a comprehensive third-year program for practicing social workers, although others than M.S.W.'s should not be excluded. Experimentation with a third-year program would appear to be the most desirable manner in which to proceed toward a possible doctorate (D.S.W.) program--but the need for this degree does not seem nearly as urgent as the other developments here discussed.

Research

There is a pressing need for more research in the field of social welfare in Hawaii, including assessments of community needs and resources, the evaluation of experimental-demonstration programs--both basic and applied research.

Needs and potentials in this area have been explored by such studies as that of the Hawaiian Homestead Program by the Legislative Reference Bureau (1965), and a study of Honolulu public housing policies now being made by two University of Hawaii sociologists under a grant from the Social Security Administration. (A study of the relative efficacy of graduate and undergraduate training for workers in child welfare, planned by the Division of Research and Planning of the Hawaii State Department of Social Services under another federal grant, recently was deferred for lack of suitable conditions.) Participation by the School of Social Work in these programs and the development of additional research projects has been handicapped by shortage of faculty with extensive research experience and interest.

Research abilities of faculty members added to the staff of the School must be strong if its program is to develop satisfactorily, particularly at the graduate level. Additional research competence will bring the School into a cooperation now lacking with other units of the University whose work should supplement its labors, such as the Social Science Research Institute, the Education Research and Development Center, the Legislative Reference Bureau, and the Juvenile Delinquency and Youth Development Center.

Staff and Facilities

To serve a larger number of students and to undertake the additional research, service, and curriculum development programs outlined in the preceding pages will clearly require additional faculty. Some of these needs have been spelled out or implied: a planner and director for the undergraduate program; a field instruction coordinator; a person responsible for continuous planning and fund negotiation in the area of continuing education; teachers with strong research interests and abilities. Some of these new staff members may well have degrees other than Master or Doctor of Social Work. One would expect, for example, over the next several years, scholars with training in welfare economics, public administration, law, sociology, or educational psychology--as well as interest in and experience with social welfare problems. Perhaps joint appointments between School and department can be arranged, and persons in the community with appropriate professional skills appointed as affiliate members of the School's faculty, thereby diversifying the talents on which it can draw. A staff with such members will readily enter into the inter-disciplinary enterprises needed for a lively teaching and research program.

Additional facilities are already needed. The School is crowded within its offices in Wist Hall. Adequate space for faculty and staff offices, research facilities and community service operations must be provided in the Social Science Building that is now being planned to effectuate the close connection with social science theory required of a contemporary School of Social Work.

The Name of the School

The expansion and redirection of the program outlined above comprise a substantial change in the activities of the School, generally a widening of scope and interdisciplinary orientation. Under these circumstances, it would be appropriate to give a new name to the School, one which points up the multiplicity of approaches to solving the individual and family problems of contemporary society. A name which connotes a greater breadth of interests and activities is the School of Social Welfare.

Footnotes

1/ See, for example: Henry J. Meyer, Edgar F. Borgatta, and Wyatt C. Jones, Girls at Vocational High: An Experiment in Social Work Intervention. New York: Russell Sage Foundation, 1965; and Howard Polsky, Cottage Six: The Social System of Delinquent Boys in Residential Treatment. New York: Russell Sage Foundation, 1962.

2/ Reclassification of state social work positions is now being made by the Hawaii Department of Personnel Services.

SECOND SUPPLEMENT TO THE
ACADEMIC DEVELOPMENT PLAN
OF THE
UNIVERSITY OF HAWAII

HONOLULU, HAWAII 1967

SECOND SUPPLEMENT TO THE ACADEMIC DEVELOPMENT PLAN OF THE UNIVERSITY OF HAWAII

Submitted by the Academic Development Plan Committee:

Norman Abramson
Bruce J. Cooil
Robert W. Hiatt
Robert M. Kamins, Chairman
Floyd W. Matson
Albert L. Tester
Murray Turnbull
Douglas S. Yamamura

FOREWORD

The Academic Development Plan of the University of Hawaii was drafted in the last half of 1963 and adopted at the beginning of 1964. A supplement to the Plan was prepared in 1965, reviewed by the appropriate University authorities, and adopted in January 1966. The following supplement expands the Plan by considering two areas discussed only provisionally (the Hilo Campus) or in passing (the academic uses of student residence halls) in the original plan.

After four years--a substantial period in the life of an institution developing as rapidly as this--it is now time to take another look at the entire Academic Development Plan of the University. Therefore, I am asking the Academic Development Plan Committee to undertake a complete revision of its work during the next year. The continued cooperation of every unit within the University will be required for the Committee to carry out this assignment.

As the members of the Committee now pause to draw breath, I thank them for their contribution to the considered growth of the University.

Thomas H. Hamilton
President

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THE HILO CAMPUS

The overall response of the University of Hawaii to the upsurge of demands within this state for higher education is decentralization, but within a unified University system. The decentralization makes possible a scale of operations which does not overwhelm individuals while unification under a single Board of Regents makes possible efficiency of operations and reasonably uniform standards of academic achievement throughout the state's institutions of higher learning.

Establishment of a branch campus at Hilo in 1947 was the first implementation of this approach with respect to classroom instruction. (It had long been applied with respect to agriculture and home economics through the branch offices and field stations of the College of Tropical Agriculture. Almost concurrently with the opening of the Hilo Branch, individual courses had been taken to students around Oahu and, to a limited extent, to other islands by the extension program of the College of General Studies.) From 1947 to 1955, the Hilo operation was improvished. It was housed in makeshift facilities, pieced its curriculum together to meet the needs of its few students (46 in 1947, 132 in 1954); it "struggled along with limited support and recognition".[1]

In 1955 the Hilo Branch moved to its present 50-acre campus and into the first buildings constructed for its student body and faculty. Then a two-year program was developed, concentrating on the arts and sciences, but with several courses in education, business administration and engineering. Enrollment exceeded 300 in 1961, 400 in 1962, and 500 in 1965.

Table 1: Student Enrollment on Island of Hawaii

Year	Total Pop. Hawaii Island	Total High School Graduates (public schools)	Freshman UH Hilo Campus*	Total Enrollment Hilo Campus*
1957	62,503	974	100	188
1958	60,710	990	141	225
1959	59,996	970	142	255
1960	61,876	933	141	259
1961	59,833	1,020	161	302
1962	57,222	1,108	215	406
1963	60,649	1,084	203	366
1964	60,000	1,082	215	402
1965	60,029	1,127	300	511
1966	61,027	1,105	284	571

* Including off-island students, who until 1965 comprised less than 5% of total.

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[1] The University of Hawaii and Higher Education in Hawaii, Department of Budget and Review, State of Hawaii, Honolulu, November 1962, p. 207.

Throughout its formative period, indeed until now, the Hilo Campus functioned without a clear charter and "within decidedly hazy educational objectives".[2] Because of its small size, it was necessarily limited in the number and variety of courses it could offer, and so largely confined to instruction normally taken by freshmen and sophomores. Faculty members and many within the student body and the wider community were understandably reluctant to accept such confinement, and urged the expansion of the curricula to include upper division courses. When, in 1963 and 1964, the State Legislature established a Community College System under the University, the Hilo faculty and various community groups voiced their desire to have the Hilo Campus become a four-year college rather than become a member of the Community College System. This desire was partially satisfied by legislative action which excepted the post high school institutions on the island of Hawaii, both the University Hilo Campus and the Hawaii Technical School, from the Community College System.

In recognition of this drive to expand the campus as a liberal arts school and in consideration of the advantages of decentralization in the University system, the original Academic Development Plan of the University (1964) encouraged Hilo Campus to work out its curriculum in substantial independence of the Manoa campus, provided only that comparable standards were maintained, so that students could transfer from Hilo to Manoa without difficulty. At that time, with barely 400 students enrolled at the Hilo Campus, it was premature to plan for a curriculum going beyond the sophomore year.

Now, however, a student population of 1,000 or more by 1972 is projected (Figure I), even assuming no expansion in the courses of study offered at Hilo. If an array of courses generally taken by upper division students were to be added, it is to be expected that student enrollment at Hilo would exceed 1,000 in five years and approach 2,000 in a decade--assuming, of course, that the program is a good one which attracts and retains students who could study elsewhere.

Not only enrollment projections have changed in the past three years. A basic curriculum reform for the University as a whole has greatly simplified the problem which existed until the adoption in 1966 of a general education core--how to select courses for a small four-year college unit. A logical basis for curricular design for Hilo, and all University campuses, is now given by this core, which provides that all baccalaureate programs attain specified educational goals in communications, mathematics, world civilization, sciences, social sciences and humanities, and specifies alternative means of satisfying these educational requirements.[3] Thus a general curricular pattern has been provided for Hilo, but one with sufficient flexibility to allow either traditional or innovative instructional design, as the campus chooses, and with broad options in emphasizing the various fields of study.

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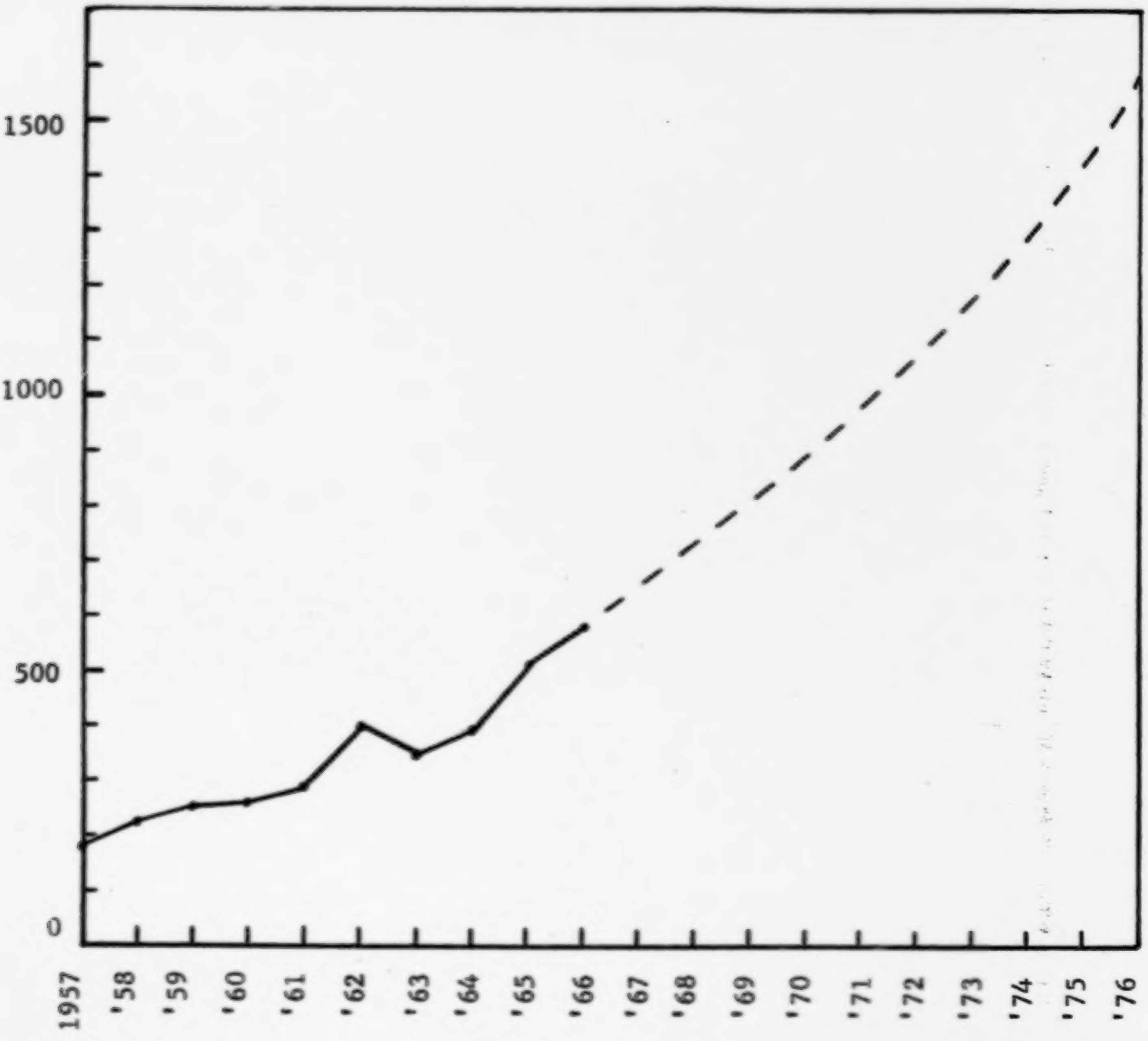
[2] An Academic Development Plan for the University of Hawaii, 1964, p. 46.

[3] Report of the Committee on University Curricular Requirements, University of Hawaii, December 1965 (adopted January 1966).

Figure 1

RECORD & PROJECTIONS OF STUDENT POPULATION
AT THE HILO CAMPUS



Assumptions:

1. Annual freshmen enrollments assumed to increase as follows: 1966-68 by 35; 1968-71, 40; 1971-73, 45; 1973-76, 50.
2. Retention rates are estimated as follows:
   Freshman to sophomore: 70%
   Sophomore to junior: 50%
   Junior to senior: 80%
3. Addition of third year programs in 1968; fourth year programs in 1972.
4. Hilo Campus to administer its own admissions policy, thereby admitting students now excluded by centralized admissions procedure.

Characteristics of Hilo Students

Hilo, even more than Manoa, is a school for commuters. More than 90 per cent of Hilo Campus students are graduates of Hawaii Island secondary schools; only 52 are accommodated in the dormitory now existing. (Another dormitory planned for 1968 will house 52 more; planning and construction monies for a 100-bed residence hall were appropriated by the 1967 legislature.) More than half of the students--53 per cent last academic year--are women, compared with 47 per cent on the Manoa Campus, and a national average for institutions of higher learning of only 38 per cent. This high proportion of women students gives some indication of the large out-migration of male students, one which might be reduced by the expansion and improvement of academic programs at Hilo, reinforced by the growing difficulty and expense of going to college on the mainland.

A small number of students are from other islands within this state while a few come from the mainland and the Trust Territory of the Pacific. This year under an experimental program 10 undergraduate grantees of the East-West Center have been in residence at Hilo, and 23 more will arrive in June 1967. (For comparison, almost a third of the students at Manoa are not residents of Oahu: 11 per cent come from other parts of this state, 14 per cent from other states, and 6 per cent from foreign countries.)

About three-fourths of the students at the Hilo Campus identify themselves as potential majors in Arts and Sciences or Education. Table 2 shows that the concentration in Arts and Sciences has increased in the past several years, while Education majors have declined almost proportionately. (The distinction between the two groups with respect to the lower division program is now of little significance, since Education students take an Arts and Sciences curriculum until the junior year.) Enrollments in professional courses, as a percentage of the entire student enrollment, have not changed significantly in the past five years.

Table 2: Distribution of Hilo Students

College of	59-60	60-61	61-62	62-63	63-64	64-65	65-66	66-67
Arts & Sciences	27.8%	35.4%	35.7%	35.2%	32.2%	43.1%	43.4%	47.4%
Engineering	1.8	3.0	6.3	8.0	10.2	6.6	5.4	6.8
Education	56.7	50.1	42.8	36.5	37.4	29.4	31.7	26.6
Agriculture	1.4	2.1	2.2	3.1	3.3	4.5	3.9	4.9
Business Administration	12.3	9.4	9.3	12.7	14.5	13.5	14.0	11.6
Nursing	-	-	-	3.1	1.5	2.1	1.6	2.7
Unclassified	-	-	3.7	1.4	.9	.8	-	-

There is evidence that the ability of entering freshmen at Hilo, as at Manoa, has risen markedly. The following Table 3 lists critical results of the Ohio State Psychological Examinations between 1955 and 1965, the last year before the University switched to College Boards. It is apparent that the percentage of entering freshmen in the top brackets--above the 80th percentile--has begun to approach the national norm, while those at the bottom of the distribution--under the 20th percentile--have been eliminated by the admission standards of the University, which apply uniformly to both campuses. (Again, by way of comparison, on the Manoa Campus 18 per cent of freshmen entering in 1965 scored above the 80th percentile. The average College Board verbal aptitude scores for freshmen matriculating in 1966 were 439 for Hilo and 475 for Manoa.)

Table 3: Ability Levels of Entering Freshmen at Hilo
Ohio State Psychological Examination Norms

Year	% Scoring Above 80th Percentile	% Scoring Below 20th Percentile
1955*	1.4	34.0
1958*	4.0	16.0
1960*	6.0	8.0
1961*	6.6	1.2
1964	9.1	2.2
1965	12.7	0.0

* The University of Hawaii and Higher Education in Hawaii, Hawaii Department of Budget & Review, Honolulu, 1962, p. 77.

The foregoing table, introduced to demonstrate a rising level of academic potential within the Hilo Campus student body, also indicates the converse: fewer and fewer marginal students are being served by the Campus. This plan will consider the appropriate role of the Hilo Campus in the education of students who desire schooling beyond the secondary level, but who cannot meet the existing entrance requirements of the Hilo and Manoa campuses.

Factors Shaping the Academic Development Plan

An academic development plan for Hilo must take into account the circumstances and needs of the student population it serves and can reasonably expect to attract in the future. While a leavening of students, likely much more numerous than now, will be non-residents, the large majority will be young persons born and raised on the Island of Hawaii. Until population growth and economic development--over the decades, not merely years--bring additional cultural opportunities to the Big Island, it is only reasonable to expect that Hilo's student body will continue to test below Manoa students in standardized tests, which almost inevitably reward sophistication. This observation makes no adverse judgment about the native abilities of Hawaii Island students, but merely points out the obvious: by the time a student is 18 his environment has helped shape his scholastic abilities. Students growing up in a large city have a lot more cultural stimuli working on them and for them. They may not be better people than their coevals from smaller communities, more intelligent or more creative, but they tend to do better on College Boards.

To serve a county which uniquely lacks a community college places a heavy responsibility on the Hilo Campus. Its student body may have a wide range of abilities and potential--from those who on other islands might just qualify for the academic program of a community college to students who can be expected to maintain high standards of academic achievement. How to serve a potentially widely diverse student body effectively with a faculty of only about eighty to a hundred is the great challenge to the Hilo Campus.

The present faculty at Hilo numbers 47, including six part-time lecturers. The faculty is a comparatively young one, with relatively few at senior ranks--only two professors at this writing. Approximately two-fifths hold the doctorate, virtually the same proportion as for the instructional staff of the University as a whole (46 per cent). Research opportunities on the campus are inherently limited, but the evidences of faculty scholarship have risen during the past few years, and academic traffic between the Hilo and Manoa campuses has increased. However, the work of the Hilo Campus continues to center on instruction to its student body and service to the community around Hilo.

The Hilo faculty has been responsive to demands on it by the nearby community, as is appropriate to a land-grant institution, working especially hard in the fields of education and political activity. As the population of the Island of Hawaii increases in number and in involvement with urban-centered economic activities--notably the tourist industry and nascent science "industry" of the state (the projected major telescope atop Mauna Kea alone will bring in a small colony of scientists' families)--demands for community service can be expected to increase. Plans for expansion of the Hilo Campus and its programs must take this factor into account.

Policies for Hilo Campus Development

The Hilo Campus should now begin its development to a four-year undergraduate college within the University system, concentrating on the arts and sciences. This development should be planned to take place in natural stages over a period--five to ten years--as its student population rises to justify full baccalaureate programs. Obviously, the process will be self-stimulating: as additional courses and faculty are added, enrollment growth will be accelerated.

This phased development must take into account the overall needs of the student population on the Big Island, and of those who will be attracted from other areas. Also to be accommodated are the appropriate demands of the community. Provision must be made for the support of a faculty of increasing size and excellence, including library and research facilities, access to a computer, modern teaching aids, and opportunities for stimulating professional service outside the regular classroom.

Recommendation 1. The Hilo Campus should maintain its liberal arts college structure, with instructional divisions similar to the present ones of humanities, natural sciences, and social sciences and education.

The most appropriate and effective curricular scope for the campus, either as a lower division or four-year institution, are the liberal arts and sciences, which are important to all professional curricula, as well as major areas of study in their own right. Organizing the campus into broad divisions, as at present, is more permissive of multi-disciplinary approaches to teaching--and curricular innovations in general--than are the traditional departments.

Recommendation 2. Professional and preprofessional courses should be limited to a selected few.

This recommendation is the corollary of the preceding one. By concentrating on arts and sciences, the Hilo Campus can maintain an academic focus and avoid demands for impossibly diverse instructional programs. In the lower division, however, it may be possible to offer a few basic courses requiring early specialization in programs such as business administration or engineering, without jeopardizing the coherence of the instructional program. Students' interest in careers in teaching, engineering, business, etc. can be maintained through clubs with a professional orientation.

Recommendation 3. Congruence with the undergraduate programs at the Manoa Campus should be maintained.

It is neither necessary nor desirable for courses of instruction at Hilo to be identical with those offered at Manoa. Innovations in teaching-learning may be easier to apply on the smaller campus; certainly advantage should be taken of the scale and environment for devising better methods of teaching. However, it is also necessary to ensure that students transferring to Manoa will not be disadvantaged, will not have to repeat their work. In effect, this means that Hilo should pay particular attention to the general education core required of all undergraduates in the University system, ensuring that the educational objectives of the core are well achieved.

Recommendation 4. The Hilo Campus should seek one or more areas in which it has an inherent advantage for emphasis and distinction in its academic program.

Excitement and individuality within a program of general competence can be attained by capitalizing on circumstances which are specially advantageous to the campus. Hawaii, as the largest island of the state, with unusual or even unique physical characteristics, about to undergo rapid economic development, with a population rich in ethnic mixtures, has such circumstances in abundance. For example, it would be possible to focus the biological sciences on terrestrial ecology, the natural sciences on volcanic phenomena, to organize the study of social sciences with "outreach" programs studying the development of Hilo and the island, to capitalize on local interest in Japanese by teaching that language and its literature extremely well-conceivably to the point where a residence hall might have Japanese as its "official" language, along the lines of the University of the Pacific and other mainland schools experimenting with such approaches to intensive language instruction.

By developing such specialities within a general arts and sciences college, Hilo would offer attractions to prospective faculty members and students alike.

Recommendation 5. The Hilo Campus should administer its own admissions program.

As the only public institution of higher learning on the Big Island, Hilo cannot close its doors to that portion of its young population which would be served by a community college--if there were one on Hawaii. Job and craft training should be left to the Hawaii Technical School, but present arrangements for opening academic classes to selected students from the Technical School should be continued and expanded. Further, students who wish to enroll at the Hilo Campus as regular students should be admitted if they meet the standards for its academic programs. (See p. 14, below.)

Recommendation 6. Short-term, non-credit remedial clinics should be offered to students who may be deficient in particular skills or understanding.

The recurring problem of remedial work, which involves students who meet present admission standards as well as those discussed in the last recommendation, needs thoughtful investigation. The findings may point to improved articulation between the University and high schools, particularly in mathematics, reading and writing, as well as a need for better diagnosis of basic skills requiring remediation. Until other approaches are developed, remedial clinics should be established in cooperation with the high schools.

Recommendation 7. A learning center with auto-instructional devices for student use should be developed; the use of TV lectures should be considered.

The Hilo Campus has a language laboratory which uses prepared tapes. This same technology should be provided for lectures on tape, in a facility available to all courses of study, much as the library provides books. The learning center should also provide auto-instructional devices--"learning machines"--for students in remedial clinics and others wanting to supplement classroom instruction. Whether located in the library or in a separate facility, the learning center should be supervised and maintained by a qualified staff.

It may be technically feasible and educationally desirable for the Hilo Campus to utilize lectures or demonstrations televised "live" from Manoa, or to use video-taped lectures in courses where instruction follows a rather standard syllabus. Available now are the video-tapes on the course in pre-calculus mathematics.

Recommendation 8. Special efforts should be directed toward the continued improvement of undergraduate instruction; a standing committee for curriculum development and appraisal of the methods and tools of instruction should be established.

Moving from an essentially lower division program to one encompassing preparation for the baccalaureate should be the occasion for a close scrutiny of the teaching-learning process. One model for classroom activity which the Hilo faculty wishes to explore for wider application is the "performance" course, one in which the student performs independently, but is held responsible by his classmates and instructor to a point of view and method. This approach, already used in expository writing, speech, art, science laboratories, etc., requires students to understand and use information, not merely to memorize it.

It would seem advisable to have students, as well as faculty members, serve on the curriculum committee. Not only can they furnish viewpoints otherwise unavailable to the faculty, but their participation in planning a curricular change helps ensure its enthusiastic reception.

Recommendation 9. Campus library services should be adequate to meet the increasing needs of the campus.

Students, faculty, and the non-university community require direct and easy access to carefully selected collections, a knowledgeable staff, and facilities which are attractive and conducive to study.

The library's collections are general in coverage, tending toward breadth in subject matter rather than depth. Because of the Hilo Campus' relative isolation, the library needs to maintain a larger collection than ordinarily necessary for a college. On the other hand, in order to meet highly specialized demands, of the Volcano Observatory, the Agricultural Experiment Station, the Cloud Physics Laboratory, the meteorological stations, and others, the library should expand its bibliographic and loan services, enabling its clientele to readily locate and gain access to research collections at Manoa and on the mainland. Since it is difficult to borrow periodicals, the library's subscription list should be expanded (and back files procured) to include all commonly indexed periodicals.

If the professional staff are to pursue their role as teacher-librarians, they should be freed from as many routine and clerical tasks as possible. More efficient operation requires a larger staff and greater reliance on trained non-professionals for many of the technical processes, as well as cooperative efforts with Manoa, especially in cataloging. As the special needs of classroom instruction dictate, the library should obtain new audio-visual materials and the facilities to use them. There is an immediate need for selected serials in microform and additional readers, as well as tapes and records along with the equipment to play them.

Since students use the library for independent study, reserve or assigned reading, recreational reading, and as a study hall, the library should provide a variety of accommodations to suit individual needs. With an expanded staff, the library should also be able to extend its hours and days of service.

The present collection of 30,000 volumes should be surveyed to ascertain where it requires additions and where selective culling would free needed shelf space. Overall, the need is for expansion, as is indicated by the standard of the American Library Association which suggests that a four-year college have a minimum collection of 50,000 carefully selected volumes for a student body of 600, adding about 10,000 books for every additional 200 students. Applying this standard, the Hilo Campus should budget for approximately 10,000 volumes a year for the next five years--the rate of accretion to be set by the capacity of its library to hold and the ability of its library staff to process the accessions.

Recommendation 10. The academic advising function should be strengthened and should involve the entire faculty.

As the Hilo Campus expands in size and complexity, academic advising becomes even more important. Since advising is an extension of the teaching function and a major factor in building close relationships between faculty members and students, the entire faculty should be involved.

Faculty workshops or discussion sessions on advising procedures and problems should be held periodically. During the first two years of residence, advisees should have the same adviser during the period of their residence, and should be assigned with close concern for parallel interests between adviser and advisee. Means of allowing students to choose their advisers, if they so desire, should be devised. Personal counselling, as distinguished from academic advising, should continue to be the responsibility of specialists.

Recommendation 11. Greater opportunities for research and professional development should be made available for faculty members at Hilo.

A vital collegiate program, attractive to faculty members and students alike, can be maintained only if creative scholarship is going on. The amount of organized research which can be mounted at an undergraduate teaching institution is inherently quite limited, but each member of the teaching faculty should be keeping up with his field of special competence and most, from time to time, should be making some contribution to knowledge or the teaching of it.

Since there is a wide variation among fields and individuals in the amount of time which can productively be used for research or scholarship, it may not be feasible to establish a rigid formula for teaching time versus research time. The utilization of faculty time should be studied with the object of encouraging scholarly activities which support the chief function of the Hilo Campus--teaching undergraduates well.

Stimulating professional activities outside the classroom also help provide a ferment which enlivens a faculty and the instructional program. Opportunities for such activities lie close at hand in the Peace Corps training project of the University, across town in Hilo. The Peace Corps project should work cooperatively with the Hilo Campus in effecting a two-way interchange which would bring Hilo faculty members into the training programs of the Corps--most readily done during summer months--and psychologists, linguists and other Peace Corps specialists into the teaching programs of the campus. It may be possible to work out satisfactory split appointments between the two units.

Opportunities for faculty participation in the activities of other nearby research or training programs should be sought. These may include work in biology with the East Hawaii Branch of the University Agricultural Experiment Station or work in physical science with the Cloud Physics Observatory--both are on campus--different physical research at the volcanological research facility in Hawaii National Park and the projected Mauna Kea Observatory, archeological work at Big Island sites in conjunction with the Bishop Museum, etc.

Recommendation 12. Faculty contacts and interchange with the Manoa Campus should be expanded.

The original Academic Development Plan (p. 46) recommended that the Hilo faculty meet more frequently with their opposite numbers from the Manoa Campus, either in Honolulu or in Hilo. To a considerable extent this recommendation has been carried out--through consultations, attendance at seminars, through appointment of Hilo professors to major University committees, etc.

However, a companion recommendation, that there be faculty interchange between the two campuses, has not yet had much effect. It is urged that the Hilo Campus continue to work with the various departments at Manoa to effect the desired interchange, for which advance planning is usually necessary.

Recommendation 13. Ready access to a computer should be provided.

A rapidly increasing range of research activities are geared to the computer; indeed, American institutions of higher learning may already be at the point where prospective faculty members inquire about the college library and computer in the same breath. Further, the computer offers opportunities, only beginning to be exploited, for supplementing classroom instruction. For both purposes, a computer should be readily available to the Hilo Campus--either on the Island of Hawaii, or by telephone connection with Manoa Campus.

Recommendation 14. Extra-curricular programs in the cultural arts should be broadly expanded.

A liberal education requires more than classroom experiences. While the Hilo student body is far from disadvantaged, many sources for intellectual, cultural and social enrichment are lacking due to geographical isolation. The lack is not disproportionately large nor insurmountable. Appropriate experiences through lectures, forums, art and music festivals, exhibits and films, can and should be provided to enrich the lives, not only of the students, but also of the community-at-large.

(1) In this endeavor, the Hilo Campus should work with the division of the University engaged in continuing education and community service, which is now being reorganized. (2) The central University facility would plan, organize, book and help finance statewide cultural programs, in which the island of Hawaii would be included. (3) A staff member of the division should be stationed at Hilo to help ascertain the demand or interest in various cultural programs, promote and stage them.

This arrangement would provide a core of ongoing cultural events, essentially an expansion of the present Lyceum Series. On top of this, the Hilo Campus should handle in all respects its own events, such as public lectures by its faculty, and music or art or dramatic presentations by its students. The cumulative effect of these activities would make the campus a cultural center for the entire community.

Recommendation 15. Continuing education should be supported at a higher level.

Again, the Hilo Campus should work cooperatively with the reorganized continuing education division of the University to expand academic opportunities for adults on the Island of Hawaii. If the Hilo Campus, for the convenience of part-time students, can offer some of its regular courses in the late afternoon or evenings, it should do so. This is a matter of priorities in budgeting and staff allocation which can be worked out only by the Hilo Campus itself.

Recommendation 16. Student residence hall facilities should be expanded to accommodate the needs of an expanded student body by the time the baccalaureate program is instituted. Such facilities should be used to support the academic program.

There has been adopted as a general developmental objective of the Manoa Campus that a larger proportion of the student body be housed on campus or within walking distance. The rationale for this policy--that a college education is achieved not only in the classroom but also in the campus community itself, applies with at least equal force to Hilo.

That same rationale also points to the use of residence halls, not merely as sleeping places, but also as places where teaching, academic advising, and co-curricular activities take place. (This approach is more fully discussed in the accompanying section of this supplement to the Academic Development Plan, on "Student Residence Halls as Integral Parts of the Academic Program.")

Since the Hilo Campus, in all likely projections will continue to be relatively small, it does not face the problems of maintaining individual student identity, and so the residential learning project proposed for the Manoa Campus may not be relevant. However, there may be other advantages in having faculty members housed in the residence halls, or otherwise bringing them into the society of the dormitory. In any case, future residence halls should be planned, with faculty and student consultation, with an eye to their possible contribution to the academic programs of the campus.

Recommendation 17. An academic year at Manoa or elsewhere off the Island of Hawaii should be established.

To make possible at least a modicum of experience in living away from home, and under circumstances which would maximize the educational benefits of that sojourn, the Hilo Campus should provide for a year "abroad" for its students who have not lived off the Island for any appreciable period. The arrangement easiest to make would be a year at Manoa or other campus within the University system. There may also be available within a few years a year-in-Japan, now being developed for students with a knowledge of Japanese. At the same time a reciprocal arrangement for importing cross-cultural influences should be developed. Beginnings have been made with the placement of East-West Center undergraduates and the increasing number of mainland students on the Hilo Campus. As these arrangements come into being, Hilo students should be strongly encouraged to take advantage of them.

Recommendation 18. The Hilo Campus should be developed to the point where it can offer a baccalaureate program in selected fields.

Guided by the foregoing recommendations and its own knowledge of educational needs and potentials of the Island of Hawaii, the Hilo Campus should stage its development over the next decade so that it can offer curricula leading to the Bachelor of Arts or Bachelor of Science in those fields which it can teach in concentrations sufficient for a baccalaureate degree. Plans are already being made for B.A. majors in social science, biological science, speech, English, and speech-English, with the option of an education minor with any of these majors. The steps in this development are outlined in the next section.

A Staged Development for the Hilo Campus

A rational order for developing Hilo from a two-year campus to a four-year college is necessary to avoid contradictions and frustration; the following sequence is suggested. Its steps are inevitably overlapping.

Stage 1. Choosing a direction: 1967-1968

The first task is to determine the special qualities of the curriculum and modes of instruction to be offered. Leading questions to be answered are what areas of special curricular interest and concentration shall be chosen (Recommendation 4), how to serve academically marginal students (Recommendations 5 and 6), what academic areas to eschew (Recommendation 2), what new teaching methods to employ (Recommendations 7 and 8).

In discussing these questions, the Hilo faculty should fully utilize informed student opinion. One means of getting this opinion would be to invite outstanding students from Hilo and Manoa to participate in curriculum-planning sessions, possibly during recesses, holidays or vacations. A major effort during the summer of 1968 should help accomplish much of this work.

Stage 2. Preparing new or expanded programs: 1967-1969

Stage 2a. 1967-1968: Preparing program for third year

Addition of upper division courses, generally moving to the junior year, should be planned with particular attention to the areas and constellation of courses in which the campus is seeking to be distinctive. Faculty members would be added within the present student-faculty ratio as a point of departure, augmented as justified to provide more time for faculty scholarship (Recommendation 11), academic advising (Recommendation 10), and curricular planning (Recommendation 8).

Simultaneously, the library collection and services should be improved (Recommendation 9)--with a staged expansion of the useful volumes to approximately 70,000--and access to a computer provided (Recommendation 13).

Stage 2b. 1967-1969: Preparing program for students with low previous academic achievement

Although Hilo Campus should have its own admissions policy (Recommendation 5), thoughtful preparation must be made for educating students who have some deficiency by the standards for University entrance. Faculty members skilled in working with late-bloomers and under-achievers and others falling in this student population, and who enjoy this work, should be recruited and integrated into the campus faculty. This aspect of curricular development is as difficult as it is important, and thus requires a high priority in the expansion of the Hilo Campus. It should be clearly understood that changing the admission policy is not to lower achievement standards on the campus, but rather to make it possible for all students who might profit from college education to have that opportunity in classes for which they qualify. Some students, for example, may require non-credit remedial work in expository writing or in speaking, while able to do satisfactory college level work in mathematics or art (Recommendation 6).

Stage 2c. 1967-1969: Preparing program for expanded continuing education and community service functions

Working with the University division charged with continuing education and community service (Recommendations 14 and 15) the Campus should prepare plans, budget and staff for expanding these functions. Funding to assure that scheduled Summer Session courses will not be cancelled for lack of sufficient enrollment should be obtained, thus placing this important aspect of continuing education on a more reliable basis.

Stage 3. Building a four-year program: 1969-1972 or thereafter

After enrollment has reached a size sufficient for the effective offering of a full baccalaureate program--provisionally, 1,000 full-time equivalent students with an upper-division component of a quality comparable to that of the Manoa Campus--the Hilo Campus should expand its curricula to include all courses necessary for the degrees it will initially offer. By this time the "year-abroad" program (Recommendation 17) should be in operation and additional residence halls constructed (Recommendation 16).

Stage 4. Offering undergraduate degrees: 1972 or thereafter

With a baccalaureate program ready for operation, the Board of Regents should authorize the University of Hawaii Hilo Campus to award the B.A. or B.S. degrees in which it has qualified curricula. "Qualified" here means of a level of excellence satisfactory to the Board of Regents as equivalent to that of the Manoa Campus and such other campuses of the University as are then in being.

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Second Oahu Campus

The foregoing plan for the Hilo Campus has no consequential relationship to the accommodation of major increases in student enrollment at the University, projected in the first supplement to the Academic Development Plan (see pages 9-17, and especially the chart following page 12 of that supplement). A report by the educational consulting firm of Heald, Hobson and Associates, dated February 2, 1967, recommended that a second campus be established on the Island of Oahu before the enrollment on the Manoa Campus reached its designated maximum of 25,000. Underlying that recommendation are considerations of economy and efficiency, stemming from the fact that the great bulk of the state's population and potential student enrollment are on Oahu. The expanded Hilo program, therefore, would supplement but by no means substitute for a second large campus.

STUDENT RESIDENCE HALLS AS INTEGRAL PARTS OF THE ACADEMIC PROGRAM

The Academic Development Plan of the University, in its examination of the implications of a "25,000 student campus," expresses concern as to how humane qualities are to be nourished in a big university--how to prevent students from feeling isolated and alienated. That section of the Plan briefly considers the necessity of campus housing and states that "student accommodations do not have to be given low priority." However, the fact is that until now campus residences have been given low priority, and, what is worse, their existence and functions have not been related to the purposes of the Academic Development Plan.

Students, faculty members and administrators have examined the educational goals of the University, and particularly the needs of undergraduates born and raised in Hawaii and have come to realize that planning for campus residences cannot be separated from academic planning in general. In our concern with the class schedule of the students, we have treated college residences as if they were in fact what we have called them, mere dormitories, offering students only places to sleep. Compartmentalized thinking has hitherto lead to the planning of classroom buildings and residence facilities as if the only connection between the two were utility lines. Only gradually have we come to recognize the opportunities available to us in making use of residence halls for academic purposes.

The University of Hawaii is not alone in this realization. Across the land, one of the most significant developments in American higher education is the emphasis now being placed upon the educational value of the student's non-class time and on the locale where he spends so much of that time--his residence hall. Allan M. Cartter, formerly Vice-President of the American Council on Education and now Chancellor at the State University of New York, has written:

> Too frequently, we, on college staffs, have had an overriding concern with the 15 hours a week the student spends in class, and too little interest in the 97 working hours he has at his disposal. . . . I would argue that two-thirds of the value of attending college is the residential experience: the loosening of ties with family and community, and the constant broadening of intellectual horizons and cultural traditions. Attending college at home can be too comfortable; most students need to be shocked from their accustomed modes of thought, and this can best be brought about if they leave home.[1]

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[1] "University Teaching and Excellence," in The Educational Record, Summer 1966, p. 293.

At the University of Michigan, Michigan State University, the University of North Carolina, the University of Massachusetts, the University of Kansas, the University of California, to name but a few representative institutions from a longer list, extensive use is being made of residence halls in instructional programs. Some of the planned dormitory use is only in an experimental stage, but at several institutions large dormitory complexes have become a regular part of campus academic facilities. A number of universities are making plans for the integration of academic space in future student residences on their campuses.

Such commitment of physical facilities is impressive in its own right, but why the universities have chosen to integrate instructional and residential programs is best revealed by the statements of some of the men closest to these programs.

Dean William Field, of the University of Massachusetts, in appraising the Orchard Hill residential learning complex at his institution, found that it made a unique addition to the University's climate for learning.

> This program . . . represents yet a new group of faculty attitudes and a new way of adapting faculty involvement with student life to a residence complex. The new residence complex contains improved areas for class and seminar instruction . . . and far more private facilities for study and group conference. . . . /Such arrangements/ place faculty and students together in a directed situation where discussion and differences must be dealt with honestly and simply. I feel that without these experiments the university's climate would have deteriorated during this period of great growth and that they have been extremely worthwhile for us.

A University of Kansas faculty group, in describing their extensive "College within the college" academic program, stated its educational objectives in this manner:

> We want to reduce the artificial separation which some (perhaps most) students have developed between the learning locale and the living accommodations. Students who share several classes and who also share living accommodations are less likely to leave their learning experiences in the classrooms, laboratory, or library behind them when they go to their dormitories or houses. . . . Our reorganization fully coordinates the various academic and non-academic functions which the college /dormitory/ and the university perform for the students. Teaching, academic advising, counseling, and enrollment will be accomplished to a great extent within each college. This, perhaps, is the heart of the project, for the university will hereafter attempt to relate to each student as a whole person, rather than dissecting him according to separate functional requirements.

Kansas sociologist, E. Jackson Baur, drew upon his own research findings in describing why the "clustering" of lower division students in living-learning units is important for the educational development of college students:

> Our interviews showed that the students in the typical classroom are a collection of competing strangers who are incapable of collaborating with one another in a pleasurable pursuit of scholarship. Attending class, for most students is an unpleasant, though necessary means, for getting grades. The student earns grades by doing assignments, making marks on examinations, and by writing papers. The spirit of the classroom is more like that of the market place than the academy.
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> . . . students /those in small classes who see each other frequently/ unlike those taking regular undergraduate courses, get to know one another and their professors. In addition to the freer interchange in the smaller classes, they become acquainted because they are taking more than one class together during the same semester or they have been classmates in a previous semester. For many of these students, the class meeting is an enjoyable social experience as well as a place for acquiring and demonstrating knowledge. . . . To the extent that the class becomes a social group, it reinforces interest in the course and the motivation to learn. It becomes a catalytic agent in the learning process.

These and comparable experiences of other American universities sum up two of the major reasons for the increasing interest in combining instructional with residential activities on the campus. First, the marriage of residential and academic activities promotes better education. Often, the most effective learning occurs when students, stimulated in the classroom, engage each other in continuing discussion in their own residential halls. This process is especially facilitated when the faculty is near at hand to join in the impromptu conversation. Secondly, residential units associated with academic programs provide the student with a greater self and group identification, a feeling of belonging to an academic community. This identification helps his adjustment to college and this leads to a more pleasant and intellectually profitable experience at the university. Satisfaction often leads to better performance, though not necessarily so. But it is quite clear that the greater sense of belonging helps bolster the student's determination to see through an academic program and hence reduces the drop-out rate, one of the major expenses in higher education.

At the University of Hawaii there are two additional advantages to be gained by establishing residential academic programs. The first advantage is educational experimentation. In dormitory-situated academic units, a university can try out curricular ideas with a smaller group of students, instead of being forced to institute new curricula en masse. By controlling and evaluating such innovations, educational feedback can be obtained quickly. If the innovation is successful, it can be expanded to other parts of the University. If the dormitory-based programs or courses prove to be unsatisfactory, it is relatively easy to stop them without undue dislocation. Some new ideas may be practical only within a dormitory. For example, some residences or parts of residences can be organized as "language houses" where conversation is entirely in French or Japanese, or selected students can readily be grouped within a residence hall to study an interdisciplinary program which requires student interaction.

The other advantage of using the residence halls for academic programs is of special relevance to an institution like the University of Hawaii. For the foreseeable future, the majority of our students will continue to commute to the campus; unless some provision is made, this majority would get only minimal educational opportunities at the University of Hawaii. However, benefits of the "living-learning" unit need not be limited to the students housed in the residence halls where the program is offered. Locker space and study rooms in the halls can be made available to students who commute to the campus. On a voluntary basis, some of these students can be assigned to the classrooms and to academic advisers who serve the resident students. For the commuting students who choose this option, there will be a particular place on the campus which is "theirs" and a particular group of undergraduates to which they "belong," giving them a place in an academic community within the large and amorphous student body. Thus, with some modification to dormitory-housed academic programs, the outreach of these programs can extend beyond the walls of the residence halls so as to enrich the college experience of many students who live off campus.

A planned synthesis of campus living and learning can stimulate and put to effective use academic innovations. It seems obvious that improved technology (electronic study carrels, computer-based instruction using individual consols, decentralized language laboratories, etc.) will bring new means of instruction to the residence halls. However, even traditional means of teaching face-to-face can advantageously be carried out in spaces near where the students live, taking advantage of the arrangement to enliven students' academic interests and to humanize the classroom.

As a beginning of this syntheses, the University should bring its teaching program into the existing dormitories, making them residential academic communities. Under this arrangement, space would be provided in the residence halls for small classrooms and for faculty offices. Here a portion of the student's program would be offered; here he would receive the individual attention of faculty members, both in terms of "office hours" and also academic advising that is such an important and scarce aspect of a university education, particularly in the undergraduate years. Primary attention in these innovative residential academic programs should be given to freshmen and sophomores, for it is these groups which need particular attention, lest they be overwhelmed by the size and seeming confusion of the large campus. Furthermore, it is these groups of students who take courses--most of them in the University's general education core--which make the presentation of courses in residence halls feasible. For example, virtually all freshmen take the course in expository writing offered by the English Department, and most of them take the course in World Civilizations offered by the History Department. It should not be merely feasible but highly efficient to have these courses, taught in reasonably small sections, offered right in the residence hall by faculty members who are officed there and who are interested in working with small groups of students. As previously indicated, the opportunity to participate in the "community" should be given to volunteers from among the students who live off campus. Voluntarism must also be the rule with respect to faculty participation.

Looking ahead, in all planning of future residence halls, space should be provided for small classrooms and for faculty offices. Thought should be given to providing in these academic residence halls additional facilities--already tried at other universities and found beneficial to the instructional program--which support the learning process. These may include a small library, little theatre, audio-visual room, cafeteria and snack bar. Without great expense but with enrichment to community life of the residence hall, there can be included space for a radio shack, student government offices, and space for publishing a bulletin of events within the residential community.

A campus which established the kinds of residential learning facilities here envisioned would be creating an environment conducive to the attainment of social and intellectual maturity by its students.

> The object of our design must be this total environment of the campus, especially if we take seriously the necessity of the student's acquiring the skills of independent learning. For it is the social environment of the campus, not the formal environment of the classroom, that most closely approximates the world in which later learning will take place, if it takes place at all.[2]

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[2] Herbert A. Simon, "The Job of a President," Educational Record, Winter 1967, p. 77.